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JOSEPH M. POTENZA

64181 U.S. PTO
08/932543
09/17/97

September 17, 1997

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Chiyoda-ku, Tokyo 100 JAPAN

VIA FACSIMILE

Re: New U.S. Patent Application
Entitled: **ACCESS CONTROL METHOD AND INFORMATION UTILIZED APPARATUS**
Your Ref: T3TYA-97S0480
Our Ref: 1701.39203

Dear Sirs:

We are pleased to report that the above-identified patent application was filed September 17,1997 with the U.S. Patent and Trademark Office. We will keep you informed of further developments.

Sincerely,

Joseph M. Potenza

JMP/ts

70579 U.S. PTO
09/17/97

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

NEW UNITED STATES PATENT APPLICATION

Assistant Commissioner of Patents
Washington, D.C. 20231

Attorney Docket No. 01701.39203

Sir:

Enclosed herewith for filing is a patent application entitled ACCESS CONTROL METHOD AND INFORMATION UTILIZATION APPARATUS by the following named inventor(s).

Full Name of Inventor	Family Name KAWAKURA	First Given Name Yasushi	Second Given Name
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1. ■ Specification 53 pages / 16 pages claims / 1 page Abstract

2. Declaration/Power of Attorney is:

   ■ attached in the regular manner.

   ☐ NOT included, but deferred under P.L. 97-247.

3. ■ 16 Sheets of ■ Formal ☐ Informal Drawings (Fig 1-18)

4. ☐ Preliminary Amendment which is to be considered a part of the disclosure as to any change in the executed specification and thus outside any proscription under 37 C.F.R. 1.118.

5. ■ Preliminary submission of an Information Disclosure Statement which is to be considered a part of the disclosure as to any change in the executed specification and thus outside any proscription under 37 C.F.R. 1.118.

6. ■ An Assignment of the invention in favor of the following organization is enclosed for recordation:

KABUSHIKI KAISHA TOSHIBA

7. ■ Priority is hereby claimed under 35 U.S.C. § 119 based upon the following application(s):

Country	Application Number	Date of Filing (day, month, year)
Japan	8-246719	18 September 1996

8. ■ Priority document(s) is attached hereto.

9. ☐ A Verified Statement Claiming Small Entity Status is attached hereto.

10. Calculation of Fees:

FEES FOR	NUMBER EXTRA	RATE	CALCULATIONS
Basic Filing Fee			$770.00
Total Claims in Excess of 20	0.00	22.00	0.00
Independent Claims in Excess of 3	12	80.00	960.00
Multiple Dependent Claims (if applicable)	0.00	260.00	0.00
Subtotal - Filing Fee Due			1,730.00
Reduction by 50%, if Small Entity (Note 37 C.F.R. § 1.9, 1.27, 1.28)		0.00	0.00
Total Filing Fee Due			1,730.00
Assignment Recordation Fee (if applicable)	1	40.00	40.00
GRAND TOTAL DUE			**1,770.00**

"Express Mail" mailing label number EL 452 750 569 US

11. PAYMENT is:

- ■ included in the amount of the GRAND TOTAL by our enclosed check. Authorization is hereby given to credit or debit our Deposit Account No. 19-0733 for any overpayment or deficiencies associated with the instant filing.
- ☐ not included, but deferred.

12. All correspondence for the attached application should be directed to:

Joseph M. Potenza, Esq.
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Date: September 17, 1997

By: Michael J. Shea #34725
Joseph M. Potenza
Reg. No. 28,175

JMP/ts

09/25/97 THU 15:52 [TX/RX NO 6059]

TITLE OF THE INVENTION

ACCESS CONTROL METHOD AND INFORMATION UTILIZATION APPARATUS

BACKGROUND OF THE INVENTION

The present invention relates to an access control method for controlling the right of accessing and utilizing electronically distributed information and to an apparatus adapted to accessing and utilizing such information.

Currently, various pieces of information are distributed for sale electronically by way of data communication networks including Internet and other satellite communication networks and recording media including CD-ROMs. Such pieces of information typically include the contents of newspapers, magazines, computer programs and recorded videos and audios.

However, there arises the serious problem of pirate copies of these contents that are illegally sold or leased to unauthorized third parties because the electronized contents can be copied without degradation. In particular, there is no effective way of prohibiting the act of making pirate copies if the contents are sold on a payment on delivery basis, in the case where the accounting is done only when the user has obtained the contents. While there may be legal means of confiscating and destructing pirate copies to be taken by the related authorities and that of suing the

pirates for the lost profit to be taken by the infringed, such actions entails enormous time and cost so that a large number of pirate copies are actually on the market.

The pay-per-view system is an alternative proposed to bypass the problem of pirate copies. With this system, the contents of information are encoded before delivered to the subscriber so as to prevent the user from utilizing the contents at his or her free will. For example, the user is prohibited from keeping the contents in decoded state and the encoded contents can be decoded each time the user uses them, so that the accounting is done when the encoded contents are decoded. By adopting this method, the accounting can be done without fail because the encoded contents must be decoded when the user uses them.

A typical known pay-per-view system will be described by referring to FIG. 1 of the accompanying drawing.

The contents of information to be delivered are encoded by the information provider 1000. The encoded contents 1006 are accompanied by a condition package 1004 including the description on the encoding system, the charge per view, the authorization for printing and/or storage, if any, and other conditions on the use of the contents to complete the information 1002 to be delivered. The information 1002 is then delivered to

the user terminal 2000 by way of one or more than one communication networks or a CR-ROM and stored in the memory section 2002 before it is retrieved.

When the user requests the user terminal 2000 to operate for displaying, printing or storing the information, the condition judging section 2004 judges if the requested operation is authorized or not by referring to the condition package 1004 of the information 1002. If authorized, it issues a command for carrying out the requested operation. Upon receiving the command, the decoding section 2006 decodes the encoded content 1006 and the decoded contents are appropriately displayed on the display screen of a display unit 2030 by a display processing section 2008, printed to produce a hard copy by a printing unit 2040 under the control of a printing processing section 2010 or stored in an external storage unit 2050 by a storage processing section 2012. If, on the other hand, the requested operation is not authorized, the condition judging section 2004 does not issue any command for carrying out the operation (or issues a command prohibiting the operation) and the request is refused.

Since the encoded contents are decoded whenever they are used so that the user is charged for each decoding operation of the decoding section 2006. Specific examples of charging methods that can be used for the system under consideration include the one for

up-loading the record of decoding operations stored in the user terminal 2000 to the information provider 1000 and charging collectively at a later data and the one for providing the user with a pre-paid that can be used at the user terminal 2000 for decoding operations.

With the above system, the condition package 1004 of the information 1002 delivered to the user terminal 2000 contains only "yes" or "no" for each operation. In other words, it controls the right of access to the delivered information for printing, storage and/or other purposes only in terms of "yes" and "no". Additionally, the charge is uniform and invariable because this conventional pay-per-view system does not take changes in the value of the information and the mode of utilization thereof into consideration. Differently stated, this conventional system is adapted to contents such as those of movie films and fictions that are intended to be accessed by a large number of people and whose values do not significantly change with time.

However, such a pay-per-view system is not adapted to the contents of newspapers and magazines whose values can change significantly with time. The contents of newspaper and magazines are valuable when they are delivered for the first time because they are new and current. Then, they quickly change their values as they change their nature with time from news

to records.

Thus, as described above, known conventional pay-per-view systems are not adapted to have flexibility in setting charges and access requirements for the contents of newspapers and magazines that can change the values in a short period of time because such systems do not take changes in the value of the information they provide and the mode of utilization thereof into consideration.

BRIEF SUMMARY OF THE INVENTION

Accordingly, it is an object of the present invention to provide an access control method and an information utilization apparatus that are adapted to have flexibility in setting charges and access requirements for the contents of information that can change the value and the mode of utilization with time.

According to one aspect of the present invention, there is provided an information utilization apparatus comprising: memory means for storing a delivered piece of information including encoded data and applicable time data defining the time period authorizing the use of the encoded data; decoding means for decoding the encoded data stored in the memory means; processing means for carrying out a set of processing steps for an operation requested by the user on the data decoded by the decoding means; and control means for controlling the decoding means and the processing means to operate

at an appropriate time in accordance with the operation requested by the user and the applicable time data stored in the memory means.

In this apparatus, the control means may comprise judging means for determining if the current time agrees with the time authorizing the use of the encoded data. In this case, the control means may control the processing means to operate when the judging means determines that the current time agrees with the time authorizing the use of the encoded data. The apparatus may further comprise reserving means for reserving the operation of the processing means until the time authorizing the use of the encoded data when the judging means determines that the current time does not agree with the time authorizing the use of the encoded data.

According to another aspect of the present invention, there is provided an information utilization apparatus comprising: memory means for storing a delivered piece of information including encoded data and applicable time data defining the time period authorizing the use of the encoded data; a plurality of decoding means for decoding the encoded data stored in the memory means; a plurality of processing means arranged respectively corresponding to the plurality of decoding means for carrying out one of different sets of processing steps for an operation requested by the

user on the data decoded by the decoding means; judging means, upon receiving a request for an operation from the user, for determining if the current time agrees with the time authorizing the use of the encoded data by referring to the applicable time data; and operation command issuing means for issuing a command responding to the request for an operation to the corresponding decoding means and the corresponding processing means if the current time is determined by the judging means to agree with the time authorizing the use of the encoded data by referring to the applicable time data.

According to another aspect of the present invention, there is provided an information utilization apparatus comprising: memory means for storing a delivered piece of information including encoded data and applicable time data defining the time period authorizing the use of the encoded data; decoding means for decoding the encoded data stored in the memory means; plain data storage means for storing the data decoded by the decoding means; a plurality of processing means for carrying out one of different sets of processing steps for an operation requested by the user on the data decoded by the decoding means; judging means, upon receiving a request for an operation from the user, for determining if the current time agrees with the time authorizing the use of the encoded data by referring to the applicable time data; and operation

command issuing means for issuing a command responding to the request for an operation to the decoding means and the corresponding processing means if the current time is determined by the judging means to agree with the time authorizing the use of the encoded data by referring to the applicable time data and the encoded data storage means does not store the encoded data, and issuing a command responding to the request for an operation to the corresponding processing means if the current time is determined by the judging means to agree with the time authorizing the use of the encoded data and the plain data storage means stores the decoded data.

According to another aspect of the present invention, there is provided an information utilization apparatus comprising: memory means for storing a delivered piece of information including encoded data and applicable time data defining the time period authorizing the use of the encoded data; a plurality of decoding means for decoding the encoded data stored in the memory means; a plurality of processing means arranged respectively corresponding to the plurality of decoding means for carrying out one of different sets of processing steps for an operation requested by the user on the data decoded by the decoding means; judging means, upon receiving a request for an operation from the user, for determining if the current time agrees

with the time authorizing the use of the encoded data by referring to the applicable time data; operation command issuing mean for issuing a command responding to the request for an operation to the corresponding decoding means and the corresponding processing means if the current time is determined by the judging means to agree with the time authorizing the use of the encoded data; and operation command reserving means for reserving the issuance of a command responding to the request for an operation until the time authorizing the use of the encoded data if the current time is determined by the judging means not to agree with the time authorizing the use of the encoded data.

According to another aspect of the present invention, there is provided an information utilization apparatus comprising: memory means for storing a delivered piece of information including encoded data and applicable time data defining the time period authorizing the use of the encoded data; decoding means for decoding the encoded data stored in the memory means; plain data storage means for storing the data decoded by the decoding means; a plurality of processing means for carrying out one of different sets of processing steps for an operation requested by the user on the data decoded by the decoding means; judging means, upon receiving a request for an operation from the user, for determining if the current time agrees

with the time authorizing the use of the encoded data by referring to the applicable time data; operation command issuing means for issuing a command responding to the request for an operation to the decoding means and the corresponding processing means if the current time is determined by the judging means to agree with the time authorizing the use of the encoded data by referring to the applicable time data and the plain data storage means does not store the decoded data, and issuing a command responding to the request for an operation to the corresponding processing means if the current time is determined by the judging means to agree with the time authorizing the use of the encoded data and the plain data storage means stores the decoded data; and operation command reserving means for reserving the issuance of a command responding to the request for an operation until the time authorizing the use of the encoded data if the current time is determined by the judging means not to agree with the time authorizing the use of the encoded data.

According to another aspect of the present invention, there is provided an information access control method for use in an information utilization apparatus having a memory for storing a delivered piece of information including encoded data, the method comprising the steps of: picking up the applicable time data added to the encoded data and indicating the time

period authorizing the use of the encoded data in response to a user request for an operation; and decoding the encoded data stored in the memory and carrying out a set of processing steps for the operation requested by the user at an appropriate time according to the picked up applicable time data.

According to another aspect of the present invention, there is provided an information access control method for use in an information utilization apparatus having a memory for storing a delivered piece of information including encoded data, the method comprising the steps of: arranging a plurality of decoding sections for decoding the encoded data stored in the memory; arranging a plurality of processing sections arranged respectively corresponding to the plurality of decoding section for carrying out one of different sets of processing steps for an operation requested by the user on the data decoded by the decoding section; judging, upon receiving a request for an operation from the user, for determining if the current time agrees with the time authorizing the use of the encoded data by referring to the applicable time data; and issuing a command responding to the request for an operation to the corresponding decoding section and the corresponding processing section if the current time is determined in the judging step to agree with the time authorizing the use of the encoded data by

referring to the applicable time data.

According to another aspect of the present invention, there is provided an information access control method for use in an information utilization apparatus having a memory for storing a delivered piece of information including encoded data, the method comprising the steps of: arranging a decoding section for decoding the encoded data stored in the memory; arranging a plain data storage section for storing the data decoded by the decoding section; arranging a plurality of processing section for carrying out one of different sets of processing steps for an operation requested by the user on the data decoded by the decoding section; judging, upon receiving a request for an operation from the user, for determining if the current time agrees with the time authorizing the use of the encoded data by referring to the applicable time data; and issuing a command responding to the request for an operation to the decoding section and the corresponding processing section if the current time is determined in the judging step to agree with the time authorizing the use of the encoded data by referring to the applicable time data and the plain data storage section does not store the decoded data, and issuing a command responding to the request for an operation to the corresponding processing section if the current time is determined in the judging step to agree with

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the time authorizing the use of the encoded data and the plain data storage section stores the decoded data.

According to another aspect of the present invention, there is provided an information access control method for use in an information utilization apparatus having a memory for storing a delivered piece of information including encoded data, the method comprising the steps of: arranging a plurality of decoding section for decoding the encoded data stored in the memory; arranging a plurality of processing sections arranged respectively corresponding to the plurality of decoding section for carrying out one of different sets of processing steps for an operation requested by the user on the data decoded by the decoding section; judging, upon receiving a request for an operation from the user, for determining if the current time agrees with the time authorizing the use of the encoded data by referring to the applicable time data; issuing a command responding to the request for an operation to the corresponding decoding section and the corresponding processing section if the current time is determined in the judging step to agree with the time authorizing the use of the encoded data; and reserving the issuance of a command responding to the request for an operation until the time authorizing the use of the encoded data if the current time is determined in the judging step not to agree with the time

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authorizing the use of the encoded data.

According to another aspect of the present invention, there is provided an information access control method for use in an information utilization apparatus having a memory for storing a delivered piece of information including encoded data, the method comprising the steps of: arranging a decoding section for decoding the encoded data stored in the memory; arranging a plain data storage section for storing the data decoded by the decoding section; a plurality of processing section for carrying out one of different sets of processing steps for an operation requested by the user on the data decoded by the decoding section; judging, upon receiving a request for an operation from the user, for determining if the current time agrees with the time authorizing the use of the encoded data by referring to the applicable time data; issuing a command responding to the request for an operation to the decoding section and the corresponding processing section if the current time is determined in the judging step to agree with the time authorizing the use of the encoded data by referring to the applicable time data and the plain data storage section does not store the decoded data, and issuing a command responding to the request for an operation to the corresponding processing section if the current time is determined in the judging step to agree with the time authorizing the

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use of the encoded data and the plain data storage section stores the decoded data; and reserving the issuance of a command responding to the request for an operation until the time authorizing the use of the encoded data if the current time is determined in the judging step not to agree with the time authorizing the use of the encoded data.

Note that the terms "encode/decode" used in this specification includes the meanings of "encrypt/decrypt" and the like. Moreover, note that the term "data" (i.e., encoded or decoded data) includes the meaning of "contents" which appears in the detailed description of the invention.

Additional objects and advantages of the present invention will be set forth in the description which follows, and in part will be obvious from the description, or may be learned by practice of the present invention. The objects and advantages of the present invention may be realized and obtained by means of the instrumentalities and combinations particularly pointed out in the appended claims.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

The accompanying drawings, which are incorporated in and constitute a part of the specification, illustrate presently preferred embodiments of the present invention and, together with the general description given above and the detailed description of the

preferred embodiments given below, serve to explain the principles of the present invention in which:

FIG. 1 is a schematic block diagram of a known information distribution system.

FIG. 2 is a schematic block diagram of an information distribution system that can be used with a first embodiment of the invention.

FIG. 3 schematically illustrates applicable time data including applicable time periods that can be used with any of the first through fourth embodiments of the invention.

FIG. 4 schematically illustrates another applicable time data including applicable time periods that can be used with any of the first through fourth embodiments of the invention.

FIGS. 5A and 5B schematically illustrate still other sets of time data including applicable time periods and a charge system that can be used with any of the first through fourth embodiments of the invention.

FIG. 6 is a flow chart of a processing operation that can be used for the first embodiment of the invention when there is an occurrence of a request for an action at a user terminal.

FIG. 7 is a schematic block diagram of an information distribution system that can be used with the second embodiment of the invention.

FIG. 8 is a flow chart of a processing operation that can be used for the second embodiment of the invention when there is an occurrence of a request for display at a user terminal.

FIG. 9 is a flow chart of a processing operation that can be used for the second embodiment of the invention when there is an occurrence of a request for an action other than display at a user terminal.

FIG. 10 is a flow chart of another processing operation that can be used for the second embodiment of the invention when there is an occurrence of a request for an action other than display at a user terminal.

FIG. 11 is a schematic block diagram of an information distribution system that can be used with the third embodiment of the invention.

FIG. 12 is a flow chart of a processing operation that can be used for the third embodiment of the invention when there is an occurrence of a request for display at a user terminal.

FIG. 13 is a flow chart of a processing operation that can be used for the third embodiment of the invention when there is an occurrence of a timer event at a user terminal.

FIG. 14 is a schematic block diagram of an information distribution system that can be used with the fourth embodiment of the invention.

FIG. 15 is a flow chart of a processing operation

that can be used for the fourth embodiment of the invention when there is an occurrence of a request for display at a user terminal.

FIG. 16 is a flow chart of a processing operation that can be used for the fourth embodiment of the invention when there is an occurrence of a request for an action other than display at a user terminal.

FIG. 17 is a flow chart of a processing operation that can be used for the fourth embodiment of the invention when there is an occurrence of a timer event at a user terminal.

FIG. 18 is a flow chart of another processing operation that can be used for the fourth embodiment of the invention when there is an occurrence of a request for an action other than display at a user terminal.

DETAILED DESCRIPTION OF THE INVENTION

Now, the present invention will be described in greater detail by referring to the accompanying drawings that illustrate preferred embodiments of the invention.

<1st Embodiment>

Firstly, the first preferred embodiment will be described by referring to FIGS. 2 through 6 of the accompanying drawing.

FIG. 2 is a schematic block diagram of an information distribution system.

The information distributed from the information

provider 100 to each user terminal 200 includes a condition package 104 and encoded contents 106. The condition package 104 includes a description on the encoding system, a charging system, and applicable time data describing the applicable time period for each mode of utilization of the information. The applicable time includes also "yes" or "no" for the displayablity, the printability and the storability of the information respectively as in the case of conventional systems.

Note that the condition package 104 cannot be falsified by the user terminal 200.

It is possible to check to see if the condition package 104 has been falsified by adding an electronic signature or the like thereto. If a falsification is detected in this check, the access processing after the detection of the falsification is stopped, thereby preventing the unauthorized access by way of the falsification of the condition package 104.

The falsification check by the electronic signature is realized by the following method, for example. First, the condition package 104 is added with the information which is the condition package encrypted with a secret key. Second, in the user terminal 200, the added information is decrypted with a public key and the decrypted information is compared with the condition package 104. Finally, an occurrence of the falsification is known if a result of the

comparison does not indicate a coincidence.

The above technique is detailed in the document "Applied Cryptography," Second Edition, Bruce Schneier, Jhon Wiley &Sons, Inc. ISBN-0-471-11709-9.

The information 102 is delivered to the user terminal 200 by the information provider 100 by way of one or more than one communication networks including Internet and/or other satellite communication networks or a storage medium such as a CD-ROM.

At the user terminal 200, the information 102 is stored in a memory section by way of a receiving set for signals coming from a network or a communication satellite or by way of a CD-ROM drive unit.

The information is provided with an identifier for the ease of control.

Now, the applicable time data shown in FIG. 3 will be described.

Referring to FIG. 3, it schematically illustrates the applicable time data including applicable time periods. It says that i) the decoded contents can be displayed at any time, ii) the decoded contents can be printed after 0 o'clock, September 12, 1996, iii) the decoded contents can be stored after 0 o'clock, September 14, 1996.

FIG. 4 schematically illustrates another applicable time data including applicable time periods. It will be appreciated that this is only a different

expression of the table of FIG. 3. Symbols of ○ and × are used to indicate if each of the modes of utilization is authorized or not for use for the period specified there.

Various different formats may be conceivable to express the applicable time data.

Referring to FIG. 5A, a charge system may be added to the applicable time data of FIG. 4. Alternatively, the charge system may be so arranged as to correspond to the modes of utilization of information as shown in FIG. 5B. With such an arrangement, there may be provided a highly comprehensive charge system.

Thus, with this first embodiment, the applicable time data as illustrated in FIG. 3, FIG. 4, FIG. 5A, FIG. 5B or in some other format are contained in the condition package 104 of the information 102.

Thus, data such as "yes" or "no" for the displayablity, the printability and the storability of the information may be omitted if such applicable time data is used.

Upon receiving a request from the user for displaying, printing and/or storing the information 102, the condition judging section 204 of the user terminal 200 judges if the request can be met or not by comparing for each requested mode of utilization the clock information read from the clock 206 (including the current time and the date in this embodiment) and the

applicable time period for that mode of utilization specified in the applicable time data in the condition package 104 to determine if the contents of the information 102 are available for the requested mode of utilization.

If the condition judging section 204 determines that the contents of the information are available for the requested mode of utilization, it issues a command for action to the decoding section 208, 212 or 216, whichever appropriate, whereas it does not issue any command if it determines that the contents are not available. The decoding section 208, 212 or 216, whichever appropriate, carries out a predetermined processing operation only for the command for action it receives from the condition judging section 204.

Note that the plain contents obtained from the decoding section are not accessible from other than the processing section uniquely connected to that decoding section.

Each of the condition judging section 204, the clock 206, the decoding section 208, the display processing section 210, the decoding section 212, the printing processing section 214, the decoding section 216 and the storage processing section 210 in FIG. 2 may be realized either by means of software or by means of hardware. Note that each of these components are so configured that the user cannot modify any part thereof.

Additionally, these components may be realized in the form a hermetically sealed unitary chip that cannot be damaged from outside.

If the clock 206 is provided as a piece of hardware, it may be realized in the form of an unreplaceable device that is initialized by the information provider 100.

Now, the operation of the embodiment will be described.

FIG. 6 is a flow chart of a processing operation when there is an occurrence of a request for an action at a user terminal.

When a request for an action that may be an action for displaying, printing or storing a specific piece of information provided by the information provider 100 is entered to a user terminal 200 by the user, the condition judging section 204 picks up the condition package 104 of the information 102 (step S11). Note that the condition package 104 contains "yes" or "no" for each mode of utilization so that the request is turned down at this step if the requested mode of utilization is not authorized at all.

The condition judging section 204 also reads the current time and date from clock 206 (step S12).

Note that step S12 may precedes step S11 or steps S11 and 12 may be carried out concurrently.

Then, the condition judging section 204 judges if

the requested action can be taken or not by comparing for each requested mode of utilization the current time and date read from the clock 206 and the applicable time period for that mode of utilization specified in the applicable time data in the condition package 104 to determine if the contents of the information 102 are available for the requested mode of utilization (step S13).

If it is determined in step S14 that the requested action (for display, printing or storage) can be taken, it issues a command for the action to the related decoding section (step S15). Note that, in this embodiment, a command is issued to the decoding section 208 for a displaying action, to the decoding section 212 for a printing action and/or to the decoding section 214 for a storing action.

Then, upon receiving a command, the decoding section decodes the encoded contents 106 and the related processing section outputs them to the related unit (step S16). More specifically, the plain contents are displayed on the display unit 230 by the display processing section 208, printed by the printing unit 240 under the control of the printing processing section 214 and/or stored in the external storage unit 250 by the external storage processing section 216.

If, on the other hand, it is determined in step S14 that the requested action is prohibited, the

condition judging section 204 does not issue any command and the request is turned down.

Alternatively, if it is determined in step S14 that the requested action is prohibited, it may be so arranged that the condition judging section 204 issues a command prohibiting the requested action and a message saying "the requested action is prohibited at the requested time", to which the time period that allows the requested action to be taken may be added or not, is displayed to notify the user thereof.

Any known technique may be used for charging fees for the purpose of the present invention.

Thus, the above described embodiment can flexibly set requirements to be met by the user for utilizing the contents of a piece of information that can change the value and the mode of utilization with time as a function of the time and date of utilization.

For instance, it can prohibit the subscriber to print and/or store the contents of a news item when they have a value as news but permit him or her to do so in order to utilize them for a data base after a given period of time.

It may alternatively be so arranged for the above embodiment that the condition judging section 204 issues a command for an action to the display processing section 208, the printing processing section 214 and the storage processing section 216 simultaneously

and only the relevant one or more than one of the display processing section 208, the printing processing section 214 and the storage processing section 216 operate for the specified action in response to the command issued from the condition judging section 204.

While a decoding section is provided for each of the modes of utilization in the above embodiment, a single decoding section may be shared by all the modes of utilization. With such an arrangement, again, the condition judging section 204 issues a command for an action to the display processing section 208, the printing processing section 214 and the storage processing section 216 simultaneously and only the relevant one or more than one of the display processing section 208, the printing processing section 214 and the storage processing section 216 operate for the specified action in response to the command issued from the condition judging section 204.

<2nd Embodiment>

While the first embodiment is designed to decode the encoded contents each time they are utilized, the time required for printing and/or storage can reduced when the contents decoded for display are used also for printing and/or storage and the operation of displaying the contents takes place prior to printing and/or storage.

The second embodiment is exactly designed to

reduce the time required for printing and/or storage when the contents decoded for display are used also for printing and/or storage and the operation of displaying the contents takes place prior to printing and/or storage.

FIG. 7 is a schematic block diagram of an information distribution system.

As in the case of the first embodiment, the information distributed from the information provider 100 to each user terminal 300 includes a condition package 104 and encoded contents 106. The condition package 104 includes a description on the encoding system, a charging system, and applicable time data describing the applicable time period for each mode of utilization of the information. The applicable time data includes also "yes" or "no" for the displayablity, the printability and the storability of the information respectively as in the case of conventional systems.

Note that the condition package 104 cannot be falsified by the user terminal 300.

It is possible to check to see if the condition package 104 has been falsified by adding an electronic signature or the like thereto. If a falsification is detected in this check, the access processing after the detection of the falsification is stopped, thereby preventing the unauthorized access by way of the falsification of the condition package 104.

The falsification check by the electronic signature is realized by the following method, for example. First, the condition package 104 is added with the information which is the condition package encrypted with a secret key. Second, in the user terminal 300, the added information is decrypted with a public key and the decrypted information is compared with the condition package 104. Finally, an occurrence of the falsification is known if a result of the comparison does not indicate a coincidence.

The information 102 is delivered to the user terminal 300 by the information provider 100 by way of one or more than one communication networks including Internet and/or other satellite communication networks or a storage medium such as a CD-ROM.

The information is provided with an identifier for the ease of control.

The applicable time data as described above by referring to the first embodiment are also used for this embodiment. More specifically, with this first embodiment, the applicable time data as illustrated in FIG. 3, FIG. 4, FIG. 5A, FIG. 5B or in some other format are contained in the condition package 104 of the information 102.

Thus, data such as "yes" or "no" for the displayablity, the printability and the storability of the information may be omitted if such the applicable time

data is used.

Upon receiving a request from the user for displaying, printing and/or storing the information 102, (provided that the contents of the information are already displayed when an operation other than display is requested,) the condition judging section 304 of the user terminal 300 judges if the request can be met or not by comparing for each requested mode of utilization the clock information read from the clock 306 (including the current time and the date in this embodiment) and the applicable time period for that mode of utilization specified in the applicable time data in the condition package 104 to determine if the contents of the information 102 are available for the requested mode of utilization.

If the condition judging section 304 determines that the contents of the information are available for any of the requested modes of utilization, it issues a command for action to the decoding section 308 and the relevant one or more than one of the display processing section 312, the printing processing section 314 and the storage processing section 316, whereas it does not issue any command if it determines that the contents are not available. The decoding section 308 and the relevant one or ones of the display processing section 312, the printing processing section 314 and the storage processing section 316 carry out

a predetermined processing operation only for the command for action they receive from the condition judging section 304.

Note that the plain contents obtained from the decoding section 308 are stored in the plain contents storage section 310 but are not accessible from other than the display processing section 312, the printing processing section 314 and the storage processing section 316.

Each of the condition judging section 304, the clock 306, the decoding section 308, the plain contents storage section 310, the display processing section 312, the printing processing section 314 and the storage processing section 316 described above may be realized either by means of software or by means of hardware. Note that each of these components are so configured that the user cannot modify any part thereof. Additionally, these components may be realized in the form a hermetically sealed unitary chip that cannot be damaged from outside.

If the clock 306 is provided as a piece of hardware, it may be realized in the form of an unreplaceable device that is initialized by the information provider 100.

Now, the operation of this second embodiment will be described.

FIG. 8 is a flow chart of a processing operation

when there is an occurrence of a request for display at a user terminal.

When a request for display is entered to a user terminal 300 by the user, the condition judging section 304 picks up the condition package 104 of the information 102 (step S21).

The condition judging section 304 also reads the current time and date from clock 306 (step S22).

Note that step S22 may precedes step S21 or steps S21 and 22 may be carried out concurrently.

Then, the condition judging section 304 judges if the requested displaying operation can be authorized at the current time by comparing the current time and date and the applicable time period for the display mode of utilization specified in the applicable time data in the condition package 104 to determine if the contents of the information 102 are available for the display mode of utilization (step S23).

If it is determined in step S24 that the requested display operation can be made, it issues a command for the operation to the decoding section 308 and the display processing section 312 (step S25).

Then, upon receiving a command, the decoding section 308 decodes the encoded contents 106 and the display processing section 312 outputs them to the display unit 330 for display (step S26).

If, on the other hand, it is determined in step

S24 that the requested action is prohibited, the condition judging section 304 does not issue any command and the request is turned down.

Alternatively, if it is determined in step S24 that the requested action is prohibited, it may be so arranged that the condition judging section 304 issues a command prohibiting the requested action and a message saying "the requested action is prohibited at the requested time", to which the time period that allows the requested action to be taken may be added or not, is displayed to notify the user thereof.

FIG. 9 is a flow chart of a processing operation when there is an occurrence of a request for an action other than display at a user terminal.

When a request for an action other than display that may be a request for printing or storage is entered to a user terminal 300 by the user, the processing operation is terminated if it is found in step S31 that the operation for display has not been carried out yet and hence the plain contents to be utilized are not stored in the plain contents storage section 310. It may be so arranged that a message "no display" or "display first" is displayed to notify the user of the current situation.

If, on the other hand, it is found in step S31 that the operation for display has been carried out and hence the plain contents to be utilized are stored in

the plain contents storage section 310, the condition judging section 304 picks up the condition package 104 of the information 102 of the information 102 to be utilized (step S32). If the condition package 104 contains "no" for the requested mode of utilization, the request is turned down at this time.

The condition judging section 304 also reads the current time and date from clock 306 (step S33).

Note that step S33 may precedes step S32 or steps S32 and 33 may be carried out concurrently.

Then, the condition judging section 304 judges if the requested operation can be authorized at the current time by comparing the current time and date and the applicable time period for the requested mode of utilization specified in the applicable time data in the condition package 104 to determine if the contents of the information 102 are available for the requested mode of utilization (step S34).

If it is determined in step S35 that the requested operation can be made, it issues a command for the operation to the printing processing section 314 or the storage processing section 316, whichever appropriate (step S36).

Then, upon receiving a command, the processing section outputs the plain contents to the related unit 330 for display (step S37). Thus, the plain contents may be printed by the printing unit 240 under the

control of the printing processing section 314 or stored in the external storage unit 230 by the storage processing section 316.

If, on the other hand, it is determined in step S35 that the requested action is prohibited, the condition judging section 304 does not issue any command and the request is turned down.

Alternatively, if it is determined in step S34 that the requested action is prohibited, it may be so arranged that the condition judging section 304 issues a command prohibiting the requested action and a message saying "the requested action is prohibited at the requested time", to which the time period that allows the requested action to be taken may be added or not, is displayed to notify the user thereof.

FIG. 10 is a flow chart of an alternative processing operation when there is an occurrence of a request for an action other than display at a user terminal.

Only the difference between FIG. 9 and FIG. 10 will be described here.

According to FIG. 9, the processing operation is terminated if it is found in step S31 that the operation for display has not been carried out yet and hence the plain contents to be utilized are not stored in the plain contents storage section 310.

According to FIG. 10, on the other hand, the

routines as described earlier by referring to FIG. 8 are carried out in steps S42 and 43 if it is found in step S41 that the operation for display has not been carried out yet and hence the plain contents to be utilized are not stored in the plain contents storage section 310 so that, if the plain contents can be displayed, the encoded contents are decoded and displayed automatically.

More specifically, in step S42, the condition judging section 304 picks up the condition package 104 of the target information 102 and also the current time and date from the clock 306 and judges if the requested operation can be authorized at the current time by comparing the current time and date and the applicable time period for the requested mode of utilization specified in the applicable time data in the condition package 104 to determine if the contents of the information 102 are available for the requested mode of utilization.

If it is determined in step S42 that the requested display operation can be made, it issues a command for the operation to the decoding section 308 and the display processing section 314 (step S43). As a result, the decoded contents are stored in the plain contents storage section 310 and displayed on the display unit 330. After step S43, the operation follows steps S44 through S49, which are identical with steps S32 through

S37 described above.

If, on the other hand, it is determined in step S42 that the requested operation is prohibited, the condition judging section 304 does not issue any command and the request is turned down. Alternatively, the condition judging section 304 may issue a command for prohibiting the requested operation and a message saying "the requested display is prohibited at the requested time", to which the time period that allows the requested action to be taken may be added or not, is displayed to notify the user thereof.

While a display operation is carried out prior to any other mode of utilization in the above description of the second embodiment, step S31 may be omitted from FIG. 9 or steps S41 through S43 may be omitted from FIG. 10 if a display operation is not discriminated from the other modes of utilization. Then, the condition judging section 304 issues a command for an operation to the related processing section if there are no plain contents.

Any known technique may be used for charging fees for the purpose of the present invention.

Thus, the above described embodiment can flexibly set requirements to be met by the user for utilizing the contents of a piece of information that can change the value and the mode of utilization with time as a function of the time and date of utilization.

<3rd Embodiment>

Now, the third embodiment of the invention will be described.

A request for an action is turned down in the first embodiment if the requested action is not authorized at the current time and date.

This embodiment differs from the first one in that, if the requested action is not authorized at the current time and date, it stores the request if the requested action can be authorized sometime in the future so that the requested action is carried out automatically when the time comes where the request is authorized.

FIG. 11 is a schematic block diagram of an information distribution system.

The following description will be focused on the difference between the two embodiments and the components that are similar to or same as those of the first embodiment will not be described any further.

The system configuration of FIG. 11 differs from that of FIG. 2 in that a command memory 220 is provided in the third embodiment to store the commands for an action that is not authorized at the current time and date but can be authorized at some other time and date in the future, that a command from the condition judging section 204 is sent to a relevant one of the decoding sections and the corresponding processing

section and that the clock information from the clock 206 are sent also to the command memory section 220.

The command memory section 220 operates for storing the commands for actions sent from the condition judging section 204 and hold them for the future. The command memory section 220 is provided with timers that correspond to the respective decoding sections 208, 212 and 216. Each of these timers is used to specify the time and date when the requested action is authorized so that it generates an timer event when a predetermined time period has elapsed. Once a timer event is generated, the command memory section 220 transmits the related command it stores for an action to the related decoding section (and the related processing section).

Each of the condition judging section 204, the clock 206, the decoding section 208, the display processing section 210, the decoding section 212, the printing processing section 214, the decoding section 216, the storage processing section 210 and the command memory section 220 described above may be realized either by means of software or by means of hardware. Note that each of these components are so configured that the user cannot modify any part thereof. Additionally, these components may be realized in the form a hermetically sealed unitary chip that cannot be damaged from outside.

If the clock 206 is provided as a piece of hardware, it may be realized in the form of an unreplaceable device that is initialized by the information provider 100 so that any other clock may not be used there.

Now, the operation of this third embodiment will be described by referring to the flow charts of FIGS. 12 and 13.

In FIG. 12, steps S51 through S56 are identical with steps S11 through S16 of FIG. 6. In other words, if the requested action is authorized to be taken at the current time and date, it is carried out at steps S51 through S56.

Under this condition, the command memory section 220 sends a command for the action only to the related components and not to any other ones.

In step S54, if it is determined that the requested action is prohibited at the time and date of the request but there exits a time period during which the request can be authorized, the condition judging section 204 sends a control signal representing a command for the action that has to be reserved and data on the time and date when the request is authorized and hence the action can be taken to the command memory section 220. Note that the control signal representing a command for the action that has to be reserved may be replaced by the presence or absence of data on the time

and date when the request for the action is authorized. The command memory section 220 stores the command for the action in the future and sets the timer for the time and date when the request for the action is authorized (step S57). It may be so arranged that a message saying that the request is reserved is displayed to notify the user thereof under this condition.

When the timer event occurs after the predetermined time period, the command memory section 220 sends the command for the action it stores to the related decoding section (and the related processing section) (step S61). Upon receiving the command for the action, the decoding section decodes the encoded contents to be utilized and the related processing section transmits a corresponding output to the unit connected to it (step S62).

Thus, this embodiment can store commands for an action that can be taken after a predetermined period of time from the current time and date so that the action can be taken when the predetermined time period has elapsed without requiring any further command to be issued by the user.

Assume that a user reads an article in a newspaper or a magazine and wants to store the contents of the article in his or her scrap book. When the user reads the article, it may most probably be authorized only for display and prohibited from being printed or stored.

If the user cannot make an appointment for printing or storing the article at that time, it is very cumbersome and painstaking for him or her to read the article once again after a predetermined period of time to issue a request for printing or storage. He or she may have totally forgotten the article by that time. This embodiment can accommodate such situations to relieve the subscriber from the cumbersome and painstaking effort of memorizing the time and date when the request for printing and/or storing the article is authorized.

Since the appointment for storing the article can be automatically stored in the memory of the embodiment, the subscriber does not have to read the article for another time when he or she issues a request for storing it. Thus, the subscriber can enjoy preparing "a scrap book" by picking up only those contents he or she wants out of the contents provided by a pay-per-view system.

<4th Embodiment>

Now, the fourth embodiment of the invention will be described.

A request for an action is turned down in the second embodiment if the requested action is not authorized at the current time and date.

This embodiment differs from the second one in that, if the requested action is not authorized at the current time and date, it stores the request if the

requested action can be authorized sometime in the future so that the requested action is carried out automatically when the time comes where the request is authorized.

FIG. 14 is a schematic block diagram of an information distribution system.

The following description will be focused on the difference between the two embodiments and the components that are similar to or same as those of the second embodiment will not be described any further.

The system configuration of FIG. 14 differs from that of FIG. 7 in that a command memory 320 is provided in the fourth embodiment to store the commands for an action that is not authorized at the current time and date but can be authorized at some other time and date in the future, that a command from the condition judging section 304 is sent to a relevant one of the decoding sections (and the corresponding processing section) and that the clock information from the clock 306 are sent also to the command memory section 320.

The command memory section 320 operates for storing the commands for actions sent from the condition judging section 304 and hold them for the future. The command memory section 320 is provided with a timer. The timer is used to specify the time and date when the decoding section 308 is authorized to decode the encoded contents for the requested action so that it

generates an timer event when a predetermined time period has elapsed. Once a timer event is generated, the command memory section 320 transmits the related command it stores for an action to the decoding section 308 (and the related processing section).

Each of the condition judging section 304, the clock 306, the decoding section 308, the plain contents storage section 310, the display processing section 312, the printing processing section 314, the storage processing section 316 and the command memory section 320 described above may be realized either by means of software or by means of hardware. Note that each of these components are so configured that the user cannot modify any part thereof. Additionally, these components may be realized in the form a hermetically sealed unitary chip that cannot be damaged from outside.

If the clock 306 is provided as a piece of hardware, it may be realized in the form of an unreplaceable device that is initialized by the information provider 100 so that any other clock may not be used there.

Now, the operation of this fourth embodiment will be described by referring to the flow charts of FIGS. 15 through 17.

FIG. 15 is a flow chart of a processing operation when there is an occurrence of a request for display at a user terminal. FIG. 16 is a flow chart of

a processing operation when there is an occurrence of a request for an action other than display at a user terminal. FIG. 17 is a flow chart of a processing operation when there is an occurrence of a timer event at a user terminal.

Firstly, the operation of processing a request for display of this embodiment will be described by referring to the flow charts of FIG. 15.

In FIG. 15, steps S71 through S76 are identical with steps S21 through S26 of FIG. 8. In other words, if the requested action is authorized to be taken at the current time and date, it is carried out at steps S71 through S76.

Under this condition, the command memory section 320 sends a command for the action only to the related components and not to any other ones.

In step S74, if it is determined that the requested action is prohibited at the time and date of the request but there exits a time period during which the request can be authorized, the condition judging section 304 sends a control signal representing a command for the action that has to be reserved and data on the time and date when the request is authorized and hence the action can be taken to the command memory section 320. Note that the control signal representing a command for the action that has to be reserved may be replaced by the presence or absence of data on the time

and date when the request for the action is authorized. The command memory section 320 stores the command for the action in the future and sets the timer for the time and date when the request for the action is authorized (step S77). It may be so arranged that a message saying that the request is reserved is displayed to notify the user thereof under this condition.

When the timer event occurs after the predetermined time period and the requested action is a display operation (step S91) in FIG. 17, the command memory section 320 sends the command for the action it stores to the decoding section 308 and the display processing section 312 (step S92). Upon receiving the command for the action, the decoding section 308 decodes the encoded contents to be utilized and the display related processing section transmits a corresponding output to the unit connected to it (step S93).

Next, the operation of processing a request for other than display of this fourth embodiment will be described by referring to the flow charts of FIG. 16.

In FIG. 16, steps S81 through S86 are identical with steps S31 through S36 of FIG. 9. In other words, if the requested action is authorized to be taken at the current time and date, it is carried out at steps S81 through S86.

Under this condition, the command memory section 320 of FIG. 14 sends a command for the action only to

the related components and not to any other ones.

On the other hand, if it is determined in step S81 that the requested action is prohibited at the time and date of the request but there exits a time period during which the request can be authorized, the condition judging section 304 sends a control signal representing a command for the action that has to be reserved and data on the time and date when the request is authorized and hence the action can be taken to the command memory section 320 and sets the timer (step S88). As in the case of the third embodiment, it may be so arranged that a message saying that the request is reserved is displayed to notify the user thereof under this condition.

Referring further to FIG. 17, when the timer event occurs after the predetermined time period and if it is found (step S91) that the request is for other than display, the command memory section 320 sends the command for the action it stores to the related processing section, which may be the printing processing section 314 or the storage processing section 316 (step S94). Upon receiving the command for the action, the related processing section transmits a corresponding output to the unit connected to it on the basis of the plain contents decoded and stored in the plain contents storage section 310 (step S95).

If the command memory section 320 stores more than

one commands, it carries out the processing operation of FIG. 17 for each and all of the stored commands. It may be so arranged that a command for display is issued first if same contents are reserved for both display and another mode of utilization other at a same appointed time or two respective appointed times that are close to each other.

FIG. 18 is a flow chart of another processing operation when there is an occurrence of a request for an action other than display at a user terminal.

In FIG. 18, steps S101 through S109 are identical with steps S41 through S49 of FIG. 10. In other words, if the requested action is authorized to be taken at the current time and date, it is carried out at steps S101 through S109. On the other hand, the routines as described earlier by referring to FIG. 8 are carried out in steps S42 and 43 if it is found in step S41 that the operation for display has not been carried out yet and hence the plain contents to be utilized are not stored in the plain contents storage section 310 so that, if the plain contents can be displayed, the encoded contents are decoded and displayed automatically.

Under this condition, the command memory section 320 of FIG. 14 sends a command for the action only to the related components and not to any other ones.

On the other hand, if it is determined in step

S101 that there exists the requested plain contents, the condition judging section 304 sends a control signal representing a command for the action that has to be reserved and data on the time and date when the request is authorized and hence the action can be taken to the command memory section 320 and sets the timer (step S110) even though the requested action is prohibited at the time and date of the request but there exits a time period during which the request can be authorized. As described above, it may be so arranged that a message saying that the request is reserved is displayed to notify the user thereof under this condition.

If it is determined in step S101 that there do not exist any plain contents and the requested display operation is not authorized, the condition judging section 304 makes an appointment in the command memory section 320 for the requested action other than display and also for the requested display operation, if such a request exists (step S111).

When the timer event occurs after the predetermined time period, the processing steps are taken in a manner as described above by referring to FIG. 17. If the command memory section 320 stores more than one commands as described above, it carries out the processing operation of FIG. 17 for each and all of the stored commands. It may be so arranged that a command

for display is issued first if same contents are reserved for both display and another mode of utilization other at a same appointed time or two respective appointed times that are close to each other.

While a display operation is carried out prior to any other mode of utilization in the above description of the fourth embodiment, step S81 may be omitted from FIG. 16 or steps S101 through S103 and step S111 may be omitted from FIG. 18 if a display operation is not discriminated from the other modes of utilization. Then, it may be so arranged that the command memory section 320 stores only commands addressed to the processing sections and, if there do not exist any plain contents before issuing a command for a requested action to the related processing section, a same command is sent to the related decoding section.

Thus, the above described embodiment can flexibly set requirements to be met by the user for utilizing the contents of a piece of information that can change the value and the mode of utilization with time as a function of the time and date of utilization.

While the present invention has been described by way of several embodiments which provide modes of utilizing encoded contents including only display, printing and storage, many other modes of utilization may be conceivable.

Additionally, while the operation of any of the

above described embodiments is controlled on the basis of the data on applicable time and date stored in condition package 104 and the current time and date available from the clock 206 (306), only data on dates may be used for controlling the operation.

For the purpose of the invention, the user terminal may be used as a server apparatus.

For example, the user terminal of any of the first through fourth embodiments may be connected to a user computer typically by way of LAN so that a request for display may be issued from the user computer to the user terminal by specifying the identifier of a piece of information. Upon receiving the request, the user terminal follows a set of processing steps as described above and transfers the display data to the user computer instead of sending them to the display unit of the terminal if the request is authorized (or when the time event for the reserved display operation occurs). The requesting user computer then outputs the received display data to the display unit. Of course, the display data cannot be decoded into plain contents. The above description may be applied to a request for printing as well.

It may alternatively be so arranged that, upon receiving a request for storage, the user terminal follows a set of processing steps as described above and transfer the plain contents corresponding to the

request to the user computer instead of sending them to the storage unit of the terminal if the request is authorized any time thereafter (or a time comes when the request is authorized any time thereafter). The requesting user computer then stores the plain contents it receives. Since the use of the plain contents is authorized anytime thereafter, the user computer can utilize the plain contents it stores in any fashion.

Many other modifications of the above embodiments may be conceivable.

Alternatively, the user terminal may be used only as a server of the user terminal of any of the first through fourth embodiments may be provided with the functional feature of a server.

While the present invention is described in terms of access right that can change with time. The fee to be charged for utilizing the contents of a piece of information may be changed with time according to the invention. If such is the case, a table showing the charge for any given time and date (or date) of utilization as illustrated in one of FIGS. 3 through 5B may be stored in advance so that the charge for a specified mode of utilization may be automatically calculated for a given time and date by a built-in charge processing section by referring to the table and the current time and date of the clock. Thus, an article of a newspaper or a magazine may be charged

high for display at the day of issuance and a reduced rate will be charged from the next day and on.

A charging system as described above may be combined with any of the above described embodiments and their modifications. For example, a daily newspaper delivered on a subscription basis may be charged only for each issue of the day and may be stored for free of charge from the next day.

Note that any of the functions of the condition judging section, the clock, the decoding section, the plain contents storing section, the display processing section, the printing processing section and the storage processing section may be realized in the form of one or more than one computer programs (a group of program code instructions). Such a computer program may be stored in a storage medium (e.g., optical disc, magnetic disc, magneto-optical disc, semiconductor memory device) and read out of it and executed by means of a processing unit whenever necessary to control the access to any piece of information provided by the information provider.

As described above, according to the invention, there are provided an access control method and an information utilization apparatus that are adapted to have flexibility in setting charges and access requirements for the contents of information that can change the value and the mode of utilization with time.

According to the invention, the time for an access to the provided information may be appointed in advance so that the access may be realized without requiring any further command to be issued from the user.

Additional advantages and modifications will readily occur to those skilled in the art. Therefore, the present invention in its broader aspects is not limited to the specific details, representative devices, and illustrated examples shown and described herein. Accordingly, various modifications may be made without departing from the spirit or scope of the general inventive concept as defined by the appended claims and their equivalents.

CLAIMS

1. An information utilization apparatus comprising:

memory means for storing a delivered piece of information including encoded data and applicable time data defining the time period authorizing the use of the encoded data;

decoding means for decoding the encoded data stored in said memory means;

processing means for carrying out a set of processing steps for an operation requested by the user on the data decoded by the decoding means; and

control means for controlling said decoding means and said processing means to operate at an appropriate time in accordance with the operation requested by the user and the applicable time data stored in said memory means.

2. An information utilization apparatus according to claim 1, wherein said control means comprises judging means for determining if the current time agrees with the time authorizing the use of said encoded data.

3. An information utilization apparatus according to claim 2, wherein said control means controls said processing means to operate when said judging means determines that the current time agrees with the time authorizing the use of said encoded data.

4. An information utilization apparatus according to claim 3, further comprising reserving means for reserving the operation of said processing means until the time authorizing the use of said encoded data when said judging means determines that the current time does not agree with the time authorizing the use of said encoded data.

5. An information utilization apparatus comprising:

memory means for storing a delivered piece of information including encoded data and applicable time data defining the time period authorizing the use of the encoded data;

a plurality of decoding means for decoding the encoded data stored in said memory means;

a plurality of processing means arranged respectively corresponding to said plurality of decoding means for carrying out one of different sets of processing steps for an operation requested by the user on the data decoded by the decoding means;

judging means, upon receiving a request for an operation from the user, for determining if the current time agrees with the time authorizing the use of said encoded data by referring to said applicable time data; and

operation command issuing means for issuing a command responding to said request for an operation to

the corresponding decoding means and the corresponding processing means if the current time is determined by said judging means to agree with the time authorizing the use of said encoded data by referring to said applicable time data.

6. An information utilization apparatus comprising:

memory means for storing a delivered piece of information including encoded data and applicable time data defining the time period authorizing the use of the encoded data;

decoding means for decoding the encoded data stored in said memory means;

plain data storage means for storing the data decoded by said decoding means;

a plurality of processing means for carrying out one of different sets of processing steps for an operation requested by the user on the data decoded by the decoding means;

judging means, upon receiving a request for an operation from the user, for determining if the current time agrees with the time authorizing the use of said encoded data by referring to said applicable time data; and

operation command issuing means for issuing a command responding to said request for an operation to said decoding means and said corresponding processing

means if the current time is determined by said judging means to agree with the time authorizing the use of said encoded data by referring to said applicable time data and the encoded data storage means does not store the encoded data, and issuing a command responding to said request for an operation to said corresponding processing means if the current time is determined by said judging means to agree with the time authorizing the use of said encoded data and said plain data storage means stores the decoded data.

7. An information utilization apparatus comprising:

memory means for storing a delivered piece of information including encoded data and applicable time data defining the time period authorizing the use of the encoded data;

a plurality of decoding means for decoding the encoded data stored in said memory means;

a plurality of processing means arranged respectively corresponding to said plurality of decoding means for carrying out one of different sets of processing steps for an operation requested by the user on the data decoded by the decoding means;

judging means, upon receiving a request for an operation from the user, for determining if the current time agrees with the time authorizing the use of said encoded data by referring to said applicable time data;

operation command issuing mean for issuing a command responding to said request for an operation to the corresponding decoding means and the corresponding processing means if the current time is determined by said judging means to agree with the time authorizing the use of said encoded data; and

operation command reserving means for reserving the issuance of a command responding to said request for an operation until the time authorizing the use of said encoded data if the current time is determined by said judging means not to agree with the time authorizing the use of said encoded data.

8. An information utilization apparatus comprising:

memory means for storing a delivered piece of information including encoded data and applicable time data defining the time period authorizing the use of the encoded data;

decoding means for decoding the encoded data stored in said memory means;

plain data storage means for storing the data decoded by said decoding means;

a plurality of processing means for carrying out one of different sets of processing steps for an operation requested by the user on the data decoded by the decoding means;

judging means, upon receiving a request for

an operation from the user, for determining if the current time agrees with the time authorizing the use of said encoded data by referring to said applicable time data;

operation command issuing means for issuing a command responding to said request for an operation to said decoding means and said corresponding processing means if the current time is determined by said judging means to agree with the time authorizing the use of said encoded data by referring to said applicable time data and said plain data storage means does not store the decoded data, and issuing a command responding to said request for an operation to said corresponding processing means if the current time is determined by said judging means to agree with the time authorizing the use of said encoded data and said plain data storage means stores the decoded data; and

operation command reserving means for reserving the issuance of a command responding to said request for an operation until the time authorizing the use of said encoded data if the current time is determined by said judging means not to agree with the time authorizing the use of said encoded data.

9. An information access control method for use in an information utilization apparatus having a memory for storing a delivered piece of information including encoded data, said method comprising the steps of:

picking up the applicable time data added to said encoded data and indicating the time period authorizing the use of the encoded data in response to a user request for an operation; and

decoding the encoded data stored in said memory and carrying out a set of processing steps for the operation requested by the user at an appropriate time according to said picked up applicable time data.

10. An information access control method for use in an information utilization apparatus having a memory for storing a delivered piece of information including encoded data, said method comprising the steps of:

arranging a plurality of decoding sections for decoding the encoded data stored in said memory;

arranging a plurality of processing sections arranged respectively corresponding to said plurality of decoding section for carrying out one of different sets of processing steps for an operation requested by the user on the data decoded by the decoding section;

judging, upon receiving a request for an operation from the user, for determining if the current time agrees with the time authorizing the use of said encoded data by referring to said applicable time data; and

issuing a command responding to said request for an operation to the corresponding decoding section and the corresponding processing section if the current

time is determined in said judging step to agree with the time authorizing the use of said encoded data by referring to said applicable time data.

11. An information access control method for use in an information utilization apparatus having a memory for storing a delivered piece of information including encoded data, said method comprising the steps of:

arranging a decoding section for decoding the encoded data stored in said memory;

arranging a plain data storage section for storing the data decoded by said decoding section;

arranging a plurality of processing section for carrying out one of different sets of processing steps for an operation requested by the user on the data decoded by the decoding section;

judging, upon receiving a request for an operation from the user, for determining if the current time agrees with the time authorizing the use of said encoded data by referring to said applicable time data; and

issuing a command responding to said request for an operation to said decoding section and said corresponding processing section if the current time is determined in said judging step to agree with the time authorizing the use of said encoded data by referring to said applicable time data and the plain data storage section does not store the decoded data, and issuing

a command responding to said request for an operation to said corresponding processing section if the current time is determined in said judging step to agree with the time authorizing the use of said encoded data and said plain data storage section stores the decoded data.

12. An information access control method for use in an information utilization apparatus having a memory for storing a delivered piece of information including encoded data, said method comprising the steps of:

arranging a plurality of decoding section for decoding the encoded data stored in said memory;

arranging a plurality of processing sections arranged respectively corresponding to said plurality of decoding section for carrying out one of different sets of processing steps for an operation requested by the user on the data decoded by the decoding section;

judging, upon receiving a request for an operation from the user, for determining if the current time agrees with the time authorizing the use of said encoded data by referring to said applicable time data;

issuing a command responding to said request for an operation to the corresponding decoding section and the corresponding processing section if the current time is determined in said judging step to agree with the time authorizing the use of said encoded data; and

reserving the issuance of a command responding to said request for an operation until the time

authorizing the use of said encoded data if the current time is determined in said judging step not to agree with the time authorizing the use of said encoded data.

13. An information access control method for use in an information utilization apparatus having a memory for storing a delivered piece of information including encoded data, said method comprising the steps of:

arranging a decoding section for decoding the encoded data stored in said memory;

arranging a plain data storage section for storing the data decoded by said decoding section;

a plurality of processing section for carrying out one of different sets of processing steps for an operation requested by the user on the data decoded by the decoding section;

judging, upon receiving a request for an operation from the user, for determining if the current time agrees with the time authorizing the use of said encoded data by referring to said applicable time data;

issuing a command responding to said request for an operation to said decoding section and said corresponding processing section if the current time is determined in said judging step to agree with the time authorizing the use of said encoded data by referring to said applicable time data and the plain data storage section does not store the decoded data, and issuing a command responding to said request for an operation to

said corresponding processing section if the current time is determined in said judging step to agree with the time authorizing the use of said encoded data and said plain data storage section stores the decoded data; and

reserving the issuance of a command responding to said request for an operation until the time authorizing the use of said encoded data if the current time is determined in said judging step not to agree with the time authorizing the use of said encoded data.

14. A storage medium having program code instructions stored thereon which perform information access control when executed by a processor in an information utilization apparatus having a memory for storing a delivered piece of information including encoded data, said instructions comprising:

picking up the applicable time data added to said encoded data and indicating the time period authorizing the use of the encoded data in response to a user request for an operation; and

decoding the encoded data stored in said memory and carrying out a set of processing steps for the operation requested by the user at an appropriate time according to said picked up applicable time data.

15. A storage medium having program code instructions stored thereon which perform information access control when executed by a processor in an information

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utilization apparatus having a memory for storing a delivered piece of information including encoded data, said instructions comprising:

arranging a plurality of decoding sections for decoding the encoded data stored in said memory;

arranging a plurality of processing sections arranged respectively corresponding to said plurality of decoding section for carrying out one of different sets of processing steps for an operation requested by the user on the data decoded by the decoding section;

judging, upon receiving a request for an operation from the user, for determining if the current time agrees with the time authorizing the use of said encoded data by referring to said applicable time data; and

issuing a command responding to said request for an operation to the corresponding decoding section and the corresponding processing section if the current time is determined in said judging step to agree with the time authorizing the use of said encoded data by referring to said applicable time data.

16. A storage medium having program code instructions stored thereon which perform information access control when executed by a processor in an information utilization apparatus having a memory for storing a delivered piece of information including encoded data, said instructions comprising:

arranging a decoding section for decoding the encoded data stored in said memory;

arranging a plain data storage section for storing the data decoded by said decoding section;

arranging a plurality of processing section for carrying out one of different sets of processing steps for an operation requested by the user on the data decoded by the decoding section;

judging, upon receiving a request for an operation from the user, for determining if the current time agrees with the time authorizing the use of said encoded data by referring to said applicable time data; and

issuing a command responding to said request for an operation to said decoding section and said corresponding processing section if the current time is determined in said judging step to agree with the time authorizing the use of said encoded data by referring to said applicable time data and the plain data storage section does not store the decoded data, and issuing a command responding to said request for an operation to said corresponding processing section if the current time is determined in said judging step to agree with the time authorizing the use of said encoded data and said plain data storage section stores the decoded data.

17. A storage medium having program code instructions stored thereon which perform information access

control when executed by a processor in an information utilization apparatus having a memory for storing a delivered piece of information including encoded data, said instructions comprising:

arranging a plurality of decoding section for decoding the encoded data stored in said memory;

arranging a plurality of processing sections arranged respectively corresponding to said plurality of decoding section for carrying out one of different sets of processing steps for an operation requested by the user on the data decoded by the decoding section;

judging, upon receiving a request for an operation from the user, for determining if the current time agrees with the time authorizing the use of said encoded data by referring to said applicable time data;

issuing a command responding to said request for an operation to the corresponding decoding section and the corresponding processing section if the current time is determined in said judging step to agree with the time authorizing the use of said encoded data; and

reserving the issuance of a command responding to said request for an operation until the time authorizing the use of said encoded data if the current time is determined in said judging step not to agree with the time authorizing the use of said encoded data.

18. A storage medium having program code instructions stored thereon which perform information access

control when executed by a processor in an information utilization apparatus having a memory for storing a delivered piece of information including encoded data, said instructions comprising:

arranging a decoding section for decoding the encoded data stored in said memory;

arranging a plain data storage section for storing the data decoded by said decoding section;

a plurality of processing section for carrying out one of different sets of processing steps for an operation requested by the user on the data decoded by the decoding section;

judging, upon receiving a request for an operation from the user, for determining if the current time agrees with the time authorizing the use of said encoded data by referring to said applicable time data;

issuing a command responding to said request for an operation to said decoding section and said corresponding processing section if the current time is determined in said judging step to agree with the time authorizing the use of said encoded data by referring to said applicable time data and the plain data storage section does not store the decoded data, and issuing a command responding to said request for an operation to said corresponding processing section if the current time is determined in said judging step to agree with the time authorizing the use of said encoded data and

said plain data storage section stores the decoded data; and

reserving the issuance of a command responding to said request for an operation until the time authorizing the use of said encoded data if the current time is determined in said judging step not to agree with the time authorizing the use of said encoded data.

US-PAT-NO: 5369705
DOCUMENT-IDENTIFIER: US 5369705 A

ABSTRACT OF THE DISCLOSURE

The encoded contents of a piece of delivered information is accompanied by an applicable time data indicating a specific time period for authorizing a particular mode of utilization. When a request for utilizing the contents is issued in an information utilization apparatus, it determines if the current time agrees with the time authorizing the requested utilization by referring to the time data annexed to the encoded contents. If the request is acceptable at the current time, a set of processing steps are carried out for decoding the encoded contents and other necessary operations. Thus, the present invention provide an information access control method adapted to have flexibility in setting charges and access requirements for the contents of information that can change the value and the mode of utilization with time.

DECLARATION FOR PATENT APPLICATION

As a below named inventor, I declare:
that I verily believe myself to be the original, first and sole (if only one individual inventor is listed below) or an original, first and joint inventor (if more than one individual inventor is listed below) of the invention in

ACCESS CONTROL METHOD AND INFORMATION UTILIZATION APPARATUS

the specification of which is attached hereto unless the following box is checked.

☐ was filed on _____ as United States Application or PCT International Application No._____, and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.
I acknowledge the duty to disclose information of which is material to patentability as defined in 37 CFR 1.56.
I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365 (b) of any foreign application(s) for patent or inventor's certificate, or 35 U.S.C. 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed:

Country	Category	Application No.	Filing Date	Priority Claim
Japan	Patent	8-246719	September 18, 1996	Yes

And I hereby appoint Donald W. Banner(Reg. No. 17,037), Harold J. Birch(Reg. No. 16,527), Edward F. McKie, Jr. (Reg. No. 17,335), William W. Beckett(Reg. No. 18,262), Dale H. Hoscheit(Reg. No. 19,090), Joseph M. Potenza(Reg. No. 28,175), Alan I. Cantor(Reg. No. 28,163), James A. Niegowski(Reg. No. 28,331), Barry L. Grossman(Reg. No. 30,844), Joseph M. Skerpon(Reg. No. 29,864), Thomas L. Peterson(Reg. No. 30,969), Nina L. Medlock(Reg. No. 29,673), William J. Fisher(Reg. No. 32,133) and Thomas H. Jackson(Reg. No. 29,808), each of whose address is 11th Floor, 1001 G Street, N.W., Washington, D.C. 20001-4597, or any one of them, my attorneys with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent & Trademark Office connected therewith, and request that correspondence be directed to Banner & Witcoff, Ltd., 11th Floor, 1001 G Street, N.W., Washington, D.C. 20001-4597.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

97S0480

DECLARATION FOR PATENT APPLICATION

I declare further that my post office address is at c/o Intellectual Property Division, KABUSHIKI KAISHA TOSHIBA, 1-1 Shibaura 1-chome, Minato-ku, Tokyo 105, Japan; and
that my citizenship and residence are as stated below next to my name:

Inventor: (Signature)	Date	Residence
Yasushi Kawakura	Date: SEP - 3, 1997 Citizen of: Japan	401 Amberson Ave., Apt. #112, Pittsburgh, Pennsylvania 15232, U. S. A.
Tetsuro Kimura	Date: SEP 10, 1997 Citizen of: Japan	Tokyo, Japan
Takashi Suzuoka	Date: SEP 10, 1997 Citizen of: Japan	Kawasaki-shi, Japan
	Date: Citizen of: Japan	
	Date: Citizen of: Japan	
	Date: Citizen of: Japan	
	Date: Citizen of: Japan	
	Date: Citizen of: Japan	

Attorney's Docket No.

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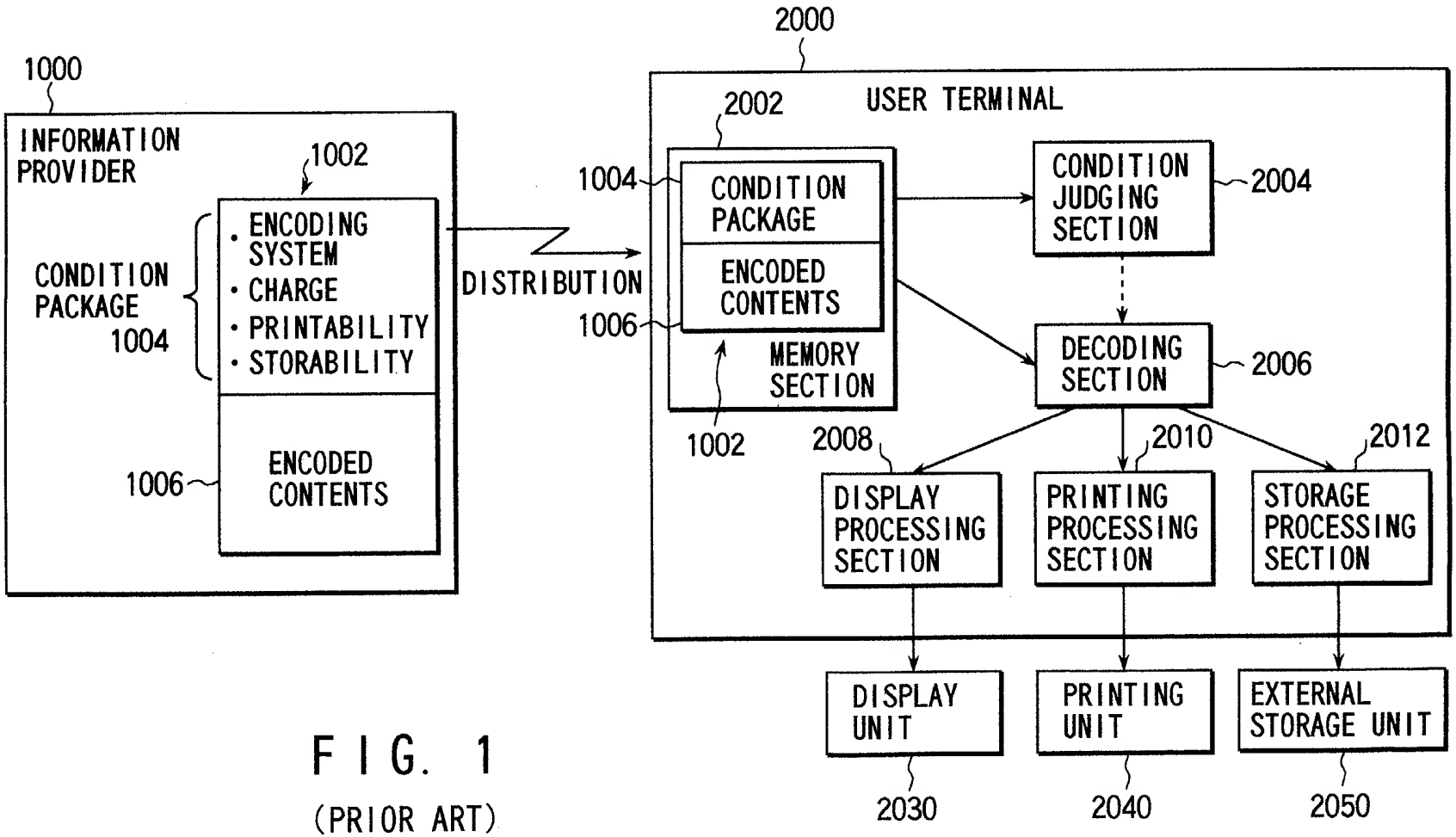

FIG. 1
(PRIOR ART)

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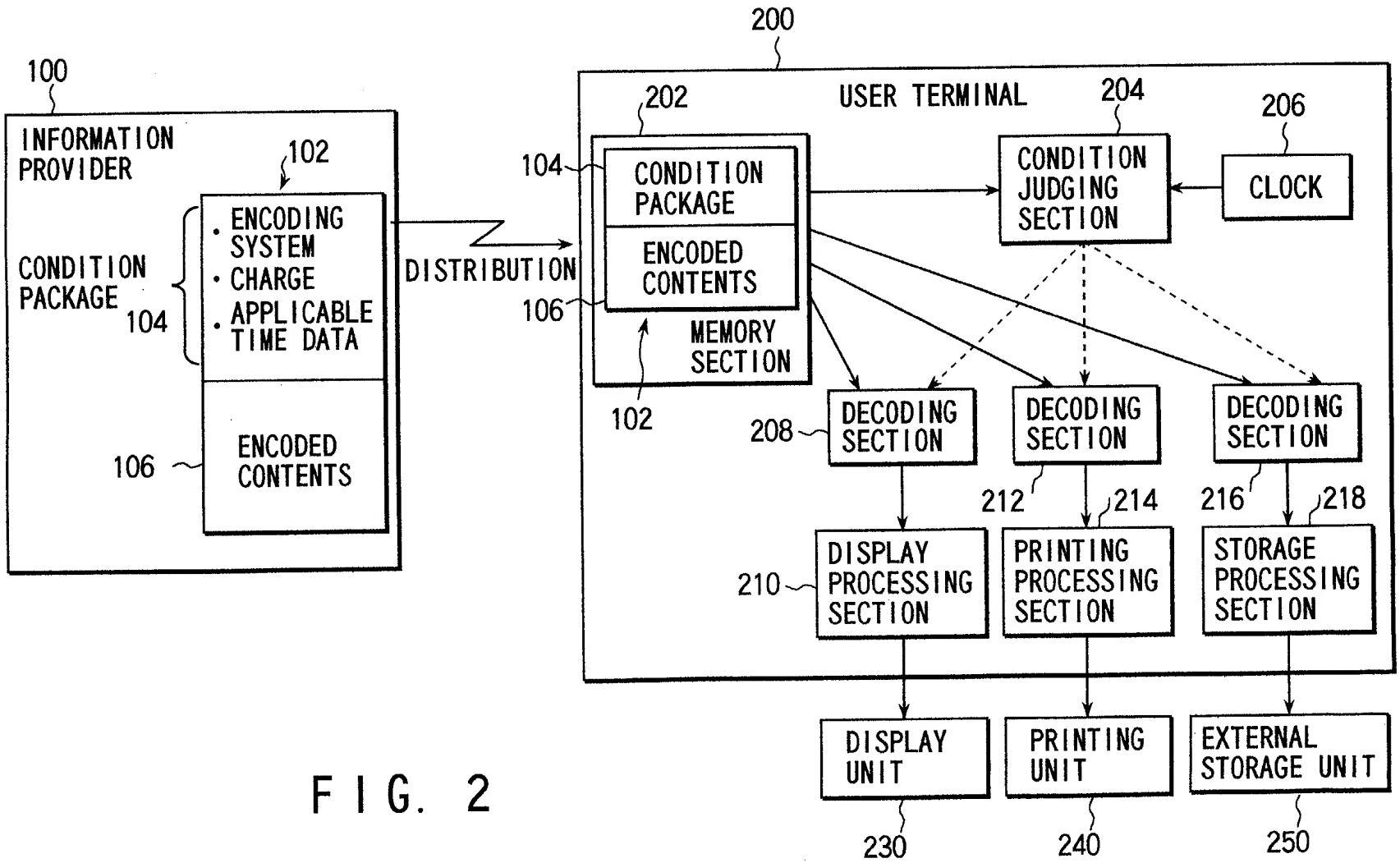

FIG. 2

FUNCTION	APPLICABLE PERIOD
DISPLAY	NO LIMIT
PRINTING	0 0'CLOCK, SEPTEMBER 12, 1996 AND ON
STORAGE	0 0'CLOCK, SEPTEMBER 14, 1996 AND ON
⋮	

FIG. 3

TIME AND DATE	DISPLAY	PRINTING	STORAGE	···
- 0 0'CLOCK, SEPTEMBER 12, 1996	○	×	×	···
0 0'CLOCK, SEPTEMBER 12, 1996 - 0 0'CLOCK, SEPTEMBER 14, 1996	○	○	×	···
0 0'CLOCK, SEPTEMBER 14, 1996 -	○	○	○	···

FIG. 4

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TIME AND DATE	DISPLAY	PRINTING	STORAGE	...	CHARGE
- 0 0'CLOCK, SEPTEMBER 12, 1996	○	×	×	...	A
0 0'CLOCK, SEPTEMBER 12, 1996 - 0 0'CLOCK, SEPTEMBER 14, 1996	○	○	×	...	B
0 0'CLOCK, SEPTEMBER 14, 1996 -	○	○	○	...	C

FIG. 5A

TIME AND DATE	DISPLAY	PRINTING	STORAGE	...	CHARGE			
					DISPLAY	PRINTING	STORAGE	...
- 0 0'CLOCK, SEPTEMBER 12, 1996	○	×	×	...	A	—	—	...
0 0'CLOCK, SEPTEMBER 12, 1996 - 0 0'CLOCK, SEPTEMBER 14, 1996	○	○	×	...	B	D	—	...
0 0'CLOCK, SEPTEMBER 14, 1996 -	○	○	○	...	C	E	F	...

FIG. 5B

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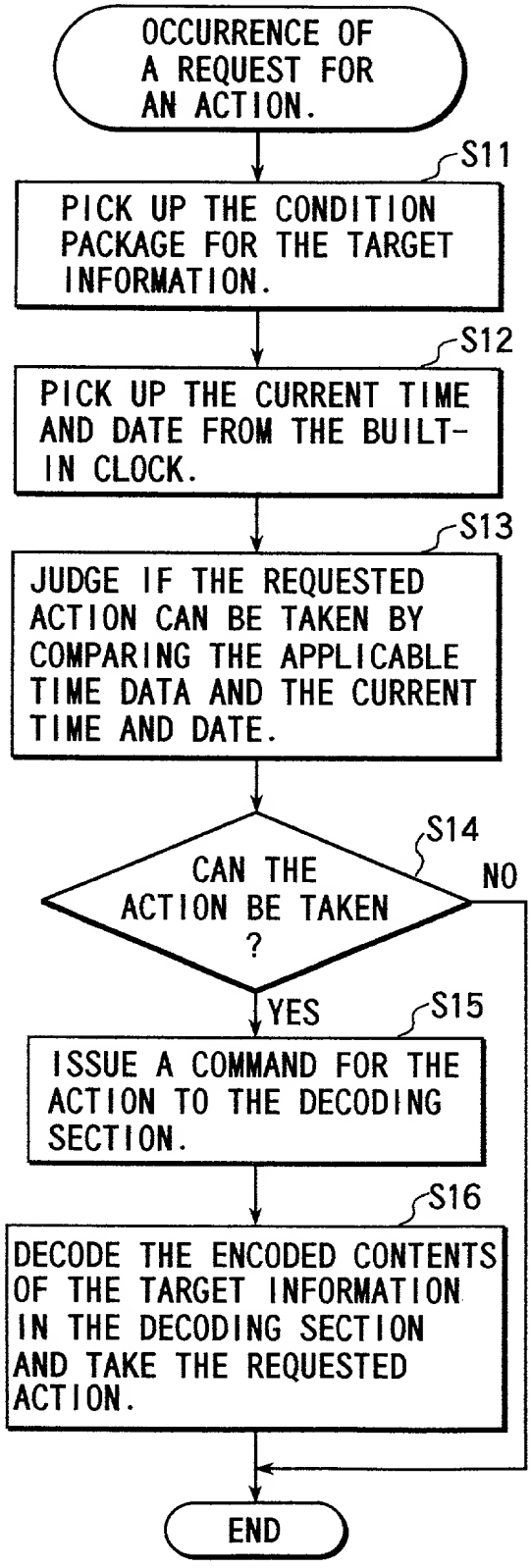


FIG. 6

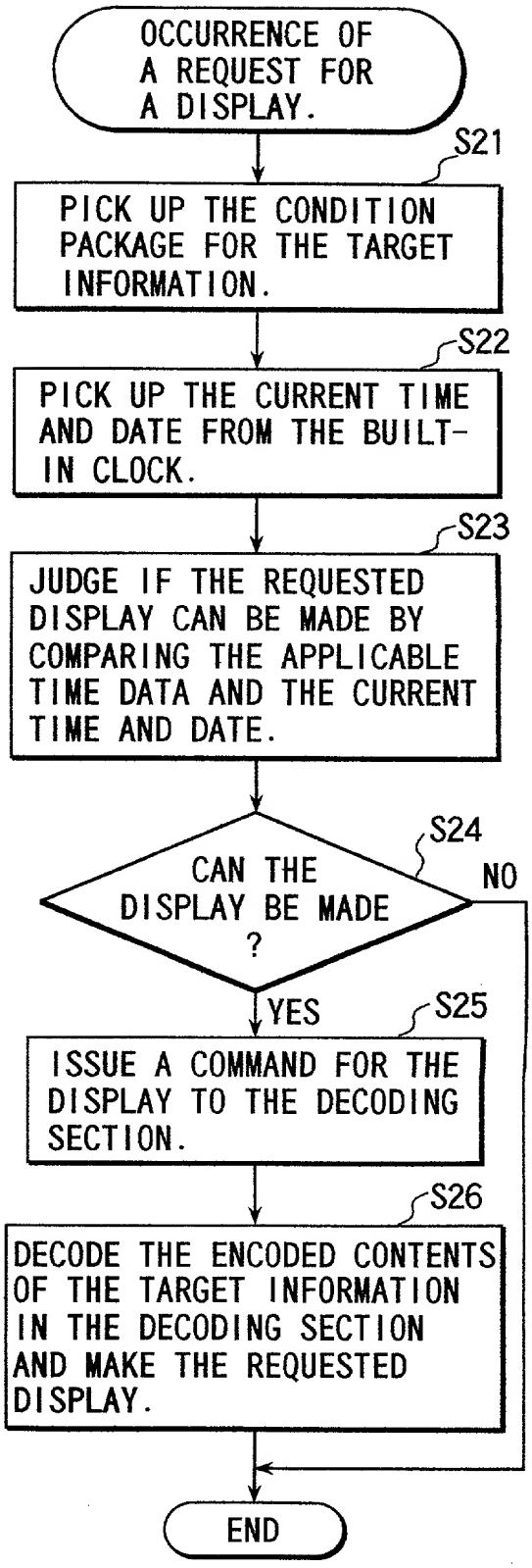


FIG. 8

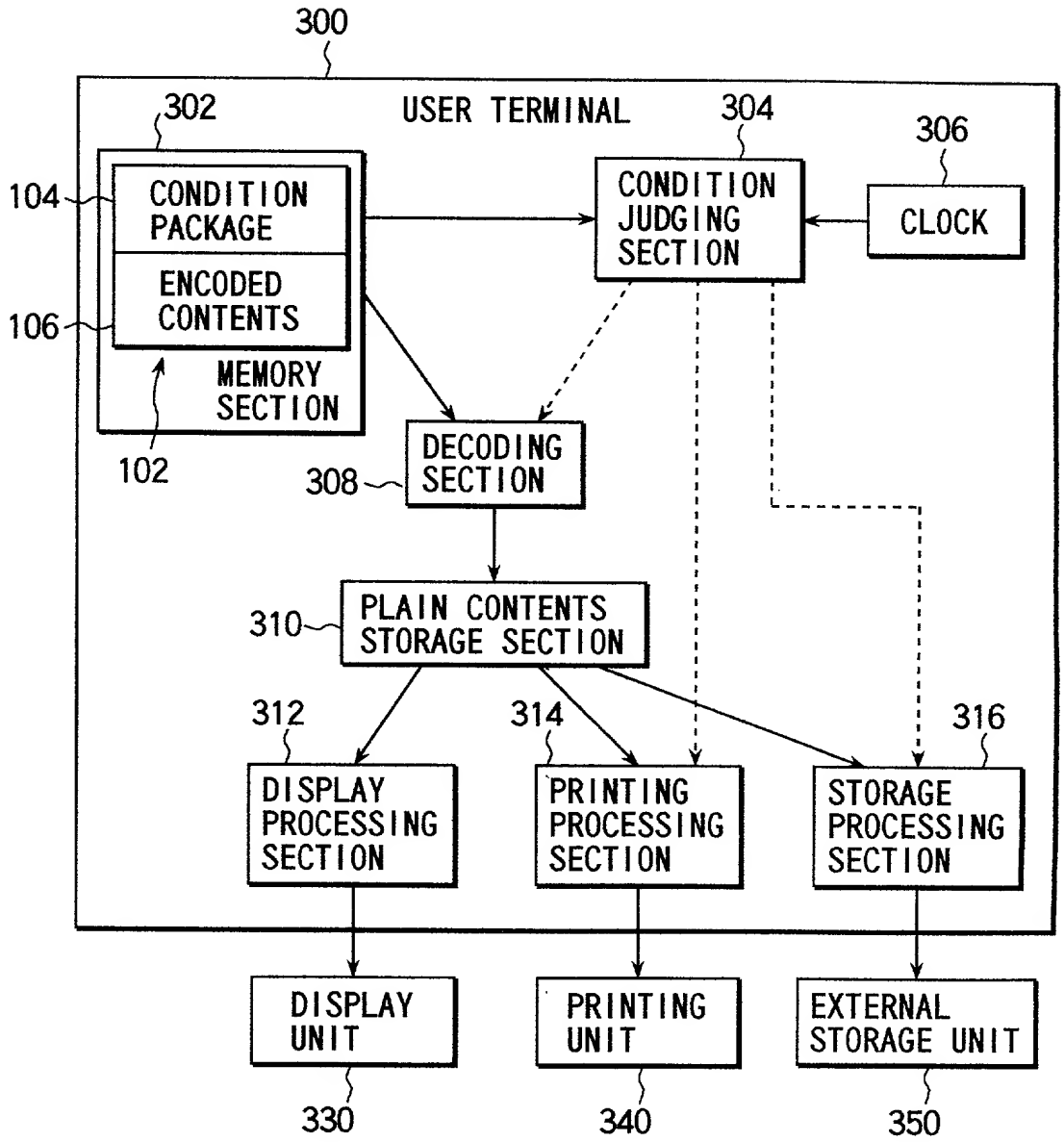

300
USER TERMINAL
302
304
306
104
CONDITION PACKAGE
ENCODED CONTENTS
106
MEMORY SECTION
102
CONDITION JUDGING SECTION
CLOCK
DECODING SECTION
308
PLAIN CONTENTS STORAGE SECTION
310
312
314
316
DISPLAY PROCESSING SECTION
PRINTING PROCESSING SECTION
STORAGE PROCESSING SECTION
DISPLAY UNIT
PRINTING UNIT
EXTERNAL STORAGE UNIT
330
340
350

FIG. 7

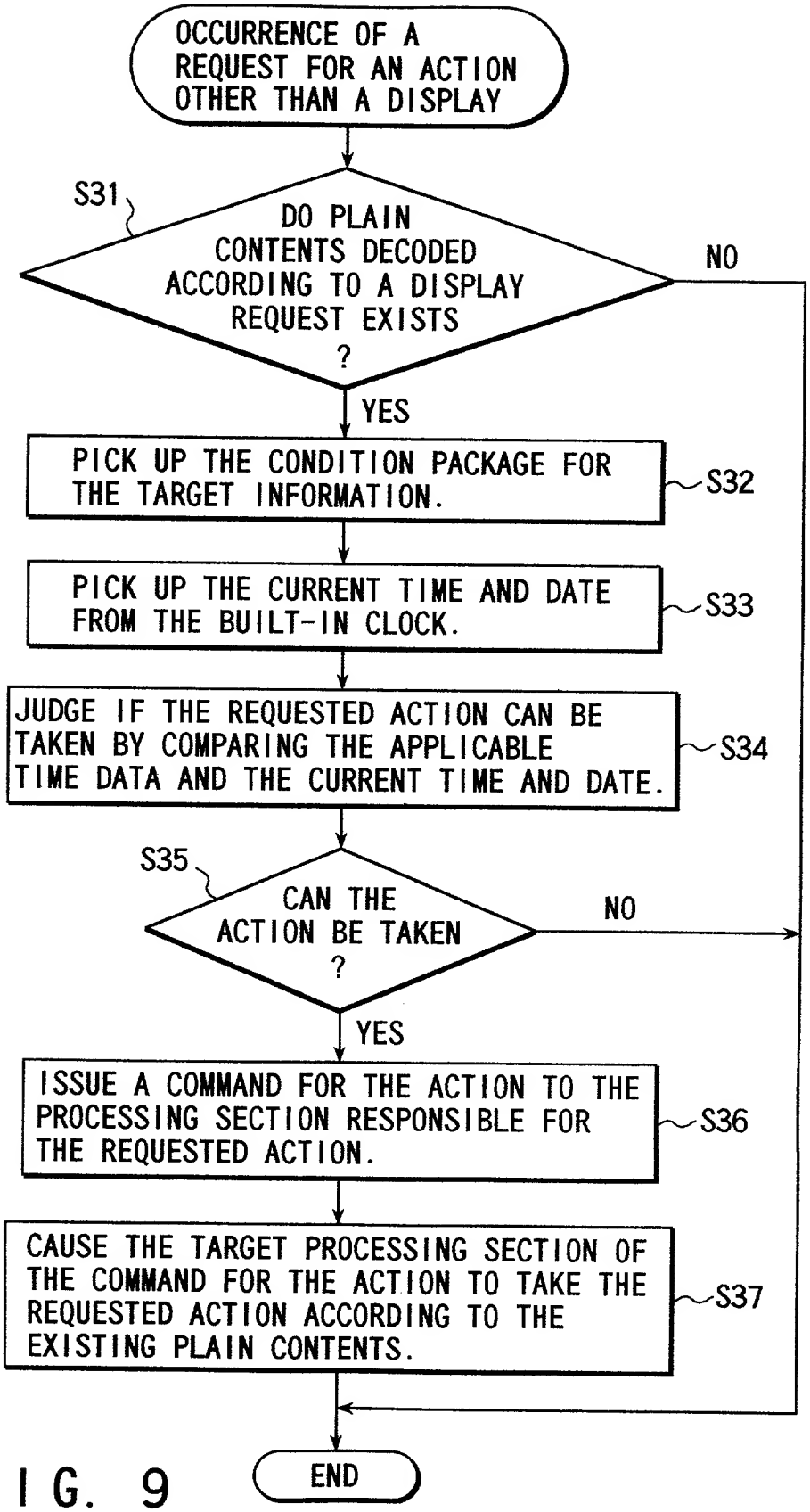

OCCURRENCE OF A REQUEST FOR AN ACTION OTHER THAN A DISPLAY
S31
DO PLAIN CONTENTS DECODED ACCORDING TO A DISPLAY REQUEST EXISTS ?
NO
YES
PICK UP THE CONDITION PACKAGE FOR THE TARGET INFORMATION.
S32
PICK UP THE CURRENT TIME AND DATE FROM THE BUILT-IN CLOCK.
S33
JUDGE IF THE REQUESTED ACTION CAN BE TAKEN BY COMPARING THE APPLICABLE TIME DATA AND THE CURRENT TIME AND DATE.
S34
S35
CAN THE ACTION BE TAKEN ?
NO
YES
ISSUE A COMMAND FOR THE ACTION TO THE PROCESSING SECTION RESPONSIBLE FOR THE REQUESTED ACTION.
S36
CAUSE THE TARGET PROCESSING SECTION OF THE COMMAND FOR THE ACTION TO TAKE THE REQUESTED ACTION ACCORDING TO THE EXISTING PLAIN CONTENTS.
S37
END

FIG. 9

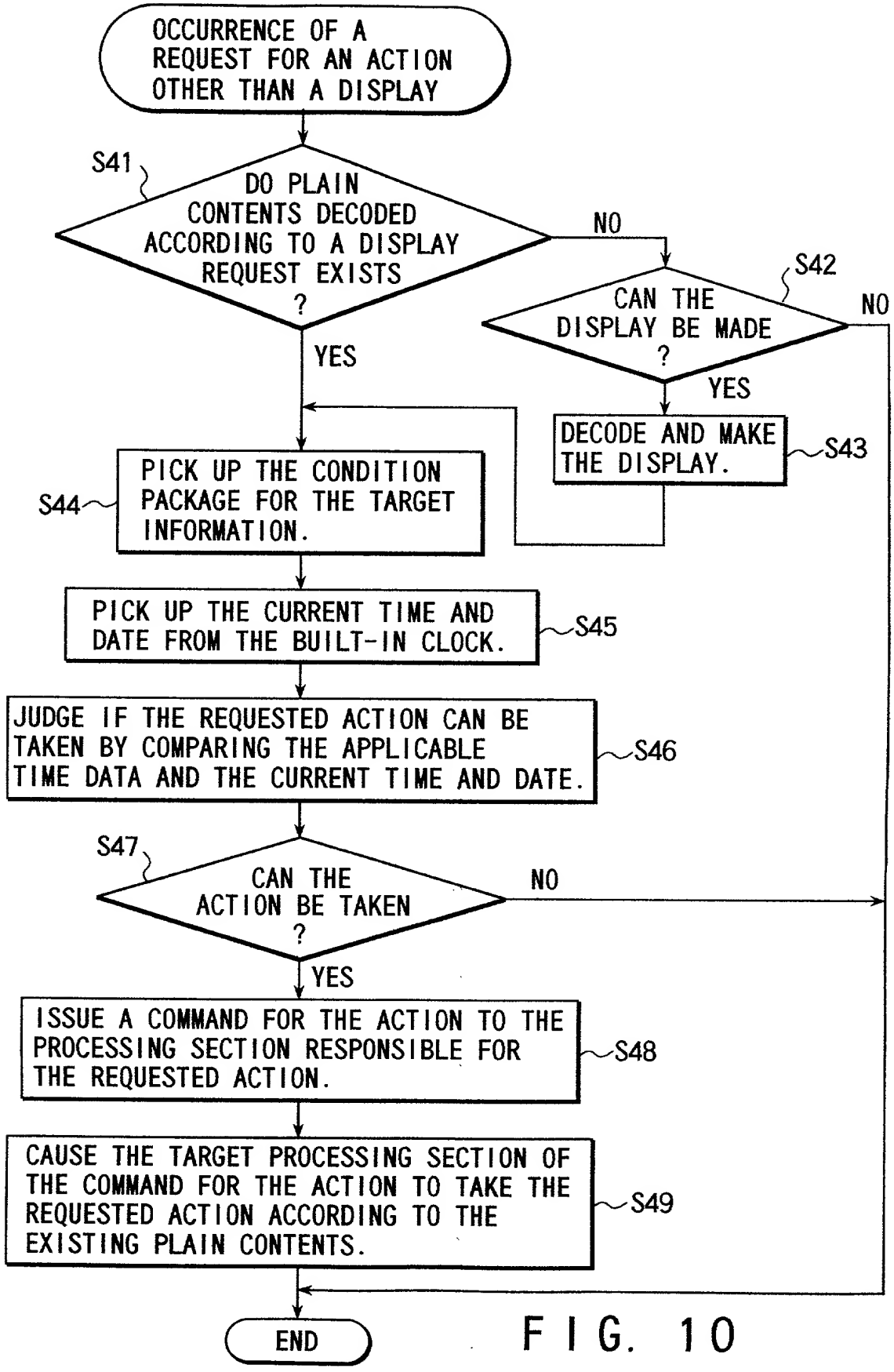
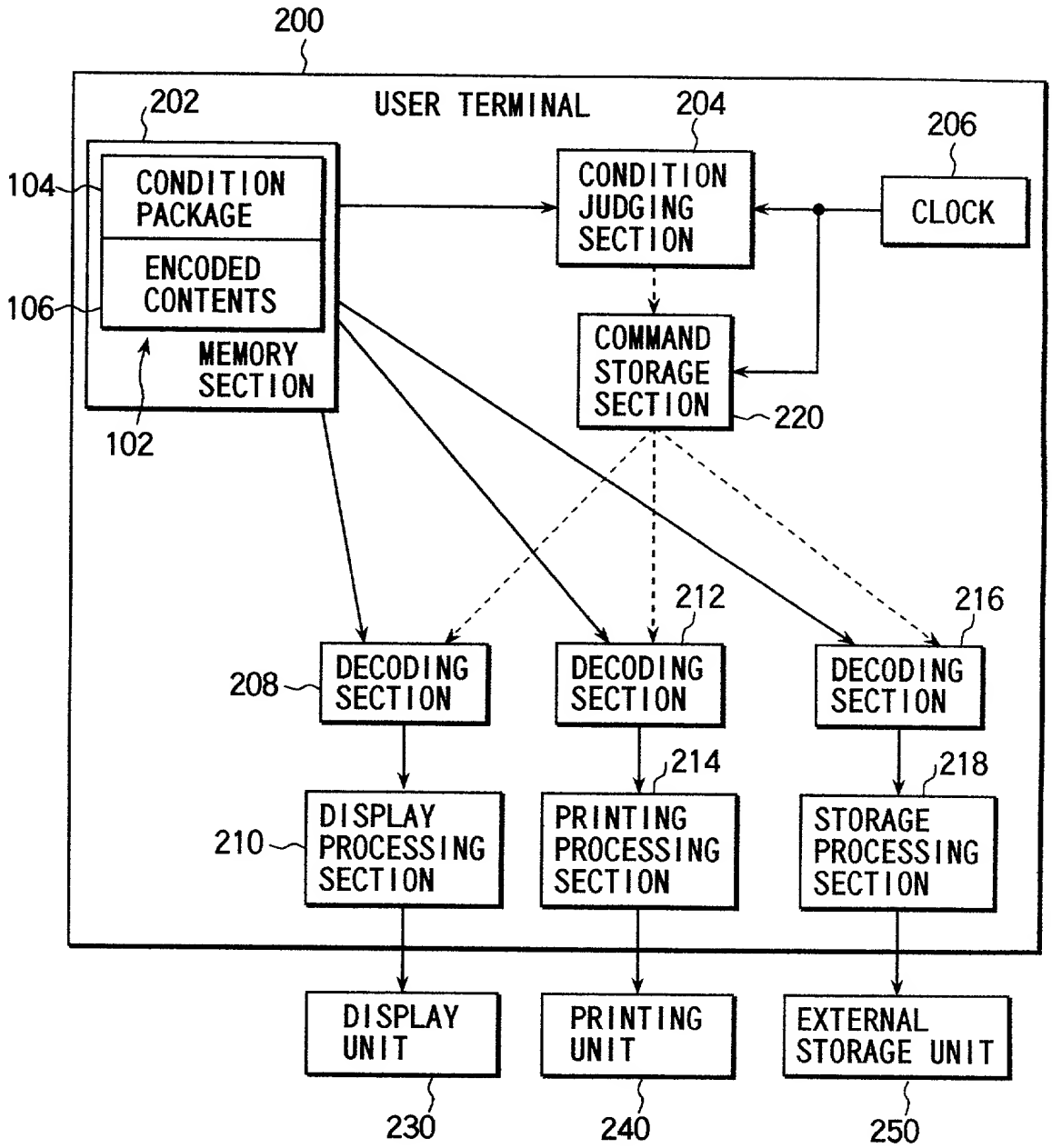

OCCURRENCE OF A REQUEST FOR AN ACTION OTHER THAN A DISPLAY
S41
DO PLAIN CONTENTS DECODED ACCORDING TO A DISPLAY REQUEST EXISTS ?
NO
YES
S42
CAN THE DISPLAY BE MADE ?
NO
YES
DECODE AND MAKE THE DISPLAY.
S43
S44
PICK UP THE CONDITION PACKAGE FOR THE TARGET INFORMATION.
PICK UP THE CURRENT TIME AND DATE FROM THE BUILT-IN CLOCK.
S45
JUDGE IF THE REQUESTED ACTION CAN BE TAKEN BY COMPARING THE APPLICABLE TIME DATA AND THE CURRENT TIME AND DATE.
S46
S47
CAN THE ACTION BE TAKEN ?
NO
YES
ISSUE A COMMAND FOR THE ACTION TO THE PROCESSING SECTION RESPONSIBLE FOR THE REQUESTED ACTION.
S48
CAUSE THE TARGET PROCESSING SECTION OF THE COMMAND FOR THE ACTION TO TAKE THE REQUESTED ACTION ACCORDING TO THE EXISTING PLAIN CONTENTS.
S49
END

FIG. 10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USER TERMINAL
202
204
206
104
CONDITION PACKAGE
ENCODED CONTENTS
106
MEMORY SECTION
102
CONDITION JUDGING SECTION
CLOCK
COMMAND STORAGE SECTION
220
212
216
208
DECODING SECTION
DECODING SECTION
DECODING SECTION
214
218
210
DISPLAY PROCESSING SECTION
PRINTING PROCESSING SECTION
STORAGE PROCESSING SECTION
DISPLAY UNIT
PRINTING UNIT
EXTERNAL STORAGE UNIT
230
240
250

FIG. 11

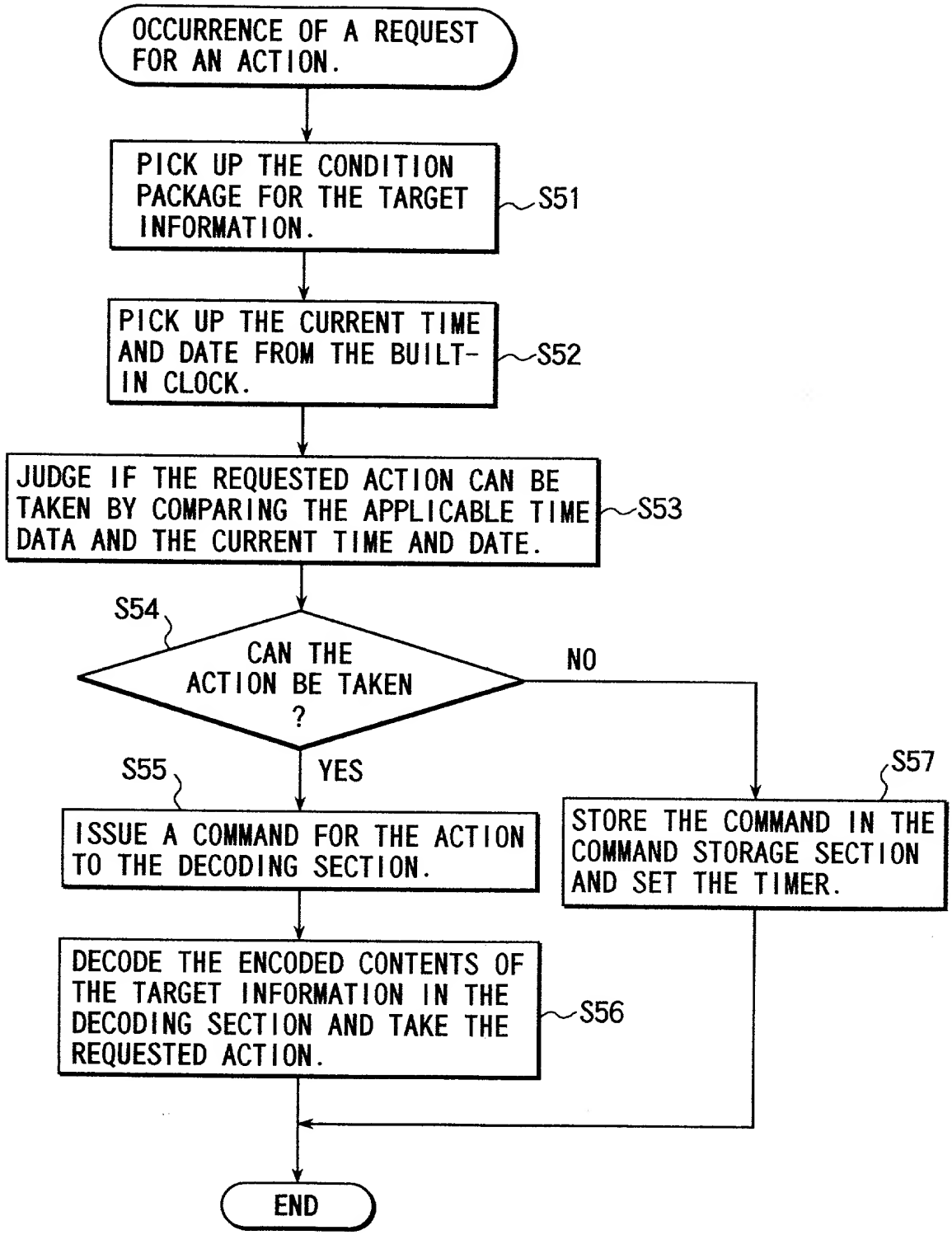
OCCURRENCE OF A REQUEST FOR AN ACTION.
PICK UP THE CONDITION PACKAGE FOR THE TARGET INFORMATION.
S51
PICK UP THE CURRENT TIME AND DATE FROM THE BUILT-IN CLOCK.
S52
JUDGE IF THE REQUESTED ACTION CAN BE TAKEN BY COMPARING THE APPLICABLE TIME DATA AND THE CURRENT TIME AND DATE.
S53
S54
CAN THE ACTION BE TAKEN ?
NO
YES
S55
ISSUE A COMMAND FOR THE ACTION TO THE DECODING SECTION.
S57
STORE THE COMMAND IN THE COMMAND STORAGE SECTION AND SET THE TIMER.
DECODE THE ENCODED CONTENTS OF THE TARGET INFORMATION IN THE DECODING SECTION AND TAKE THE REQUESTED ACTION.
S56
END

FIG. 12

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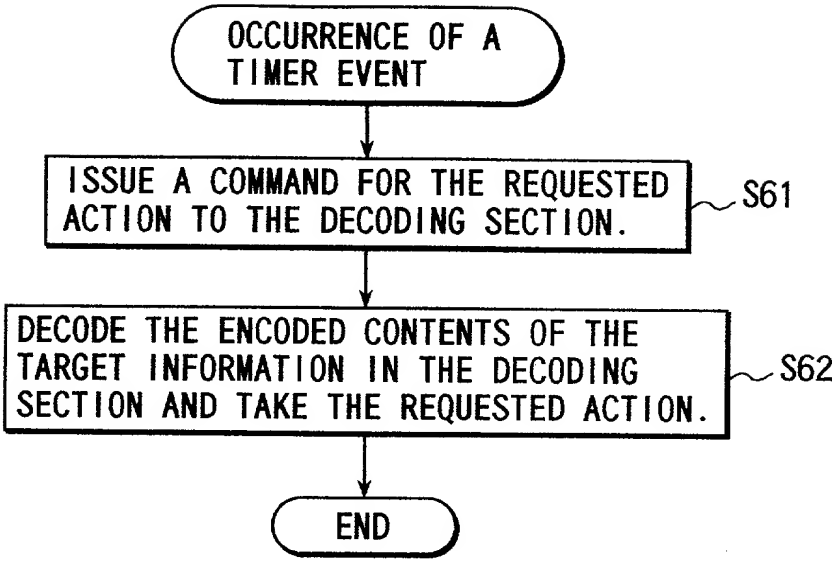


FIG. 13

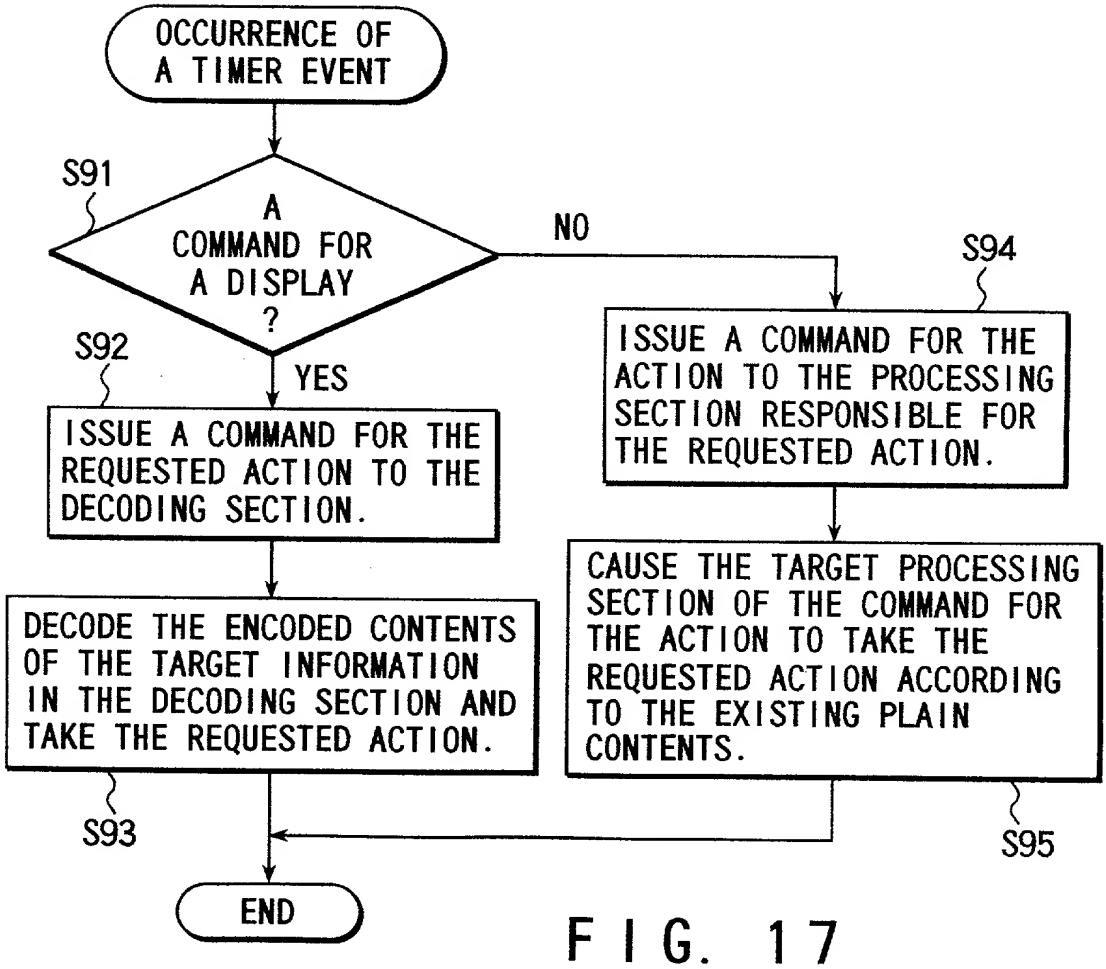
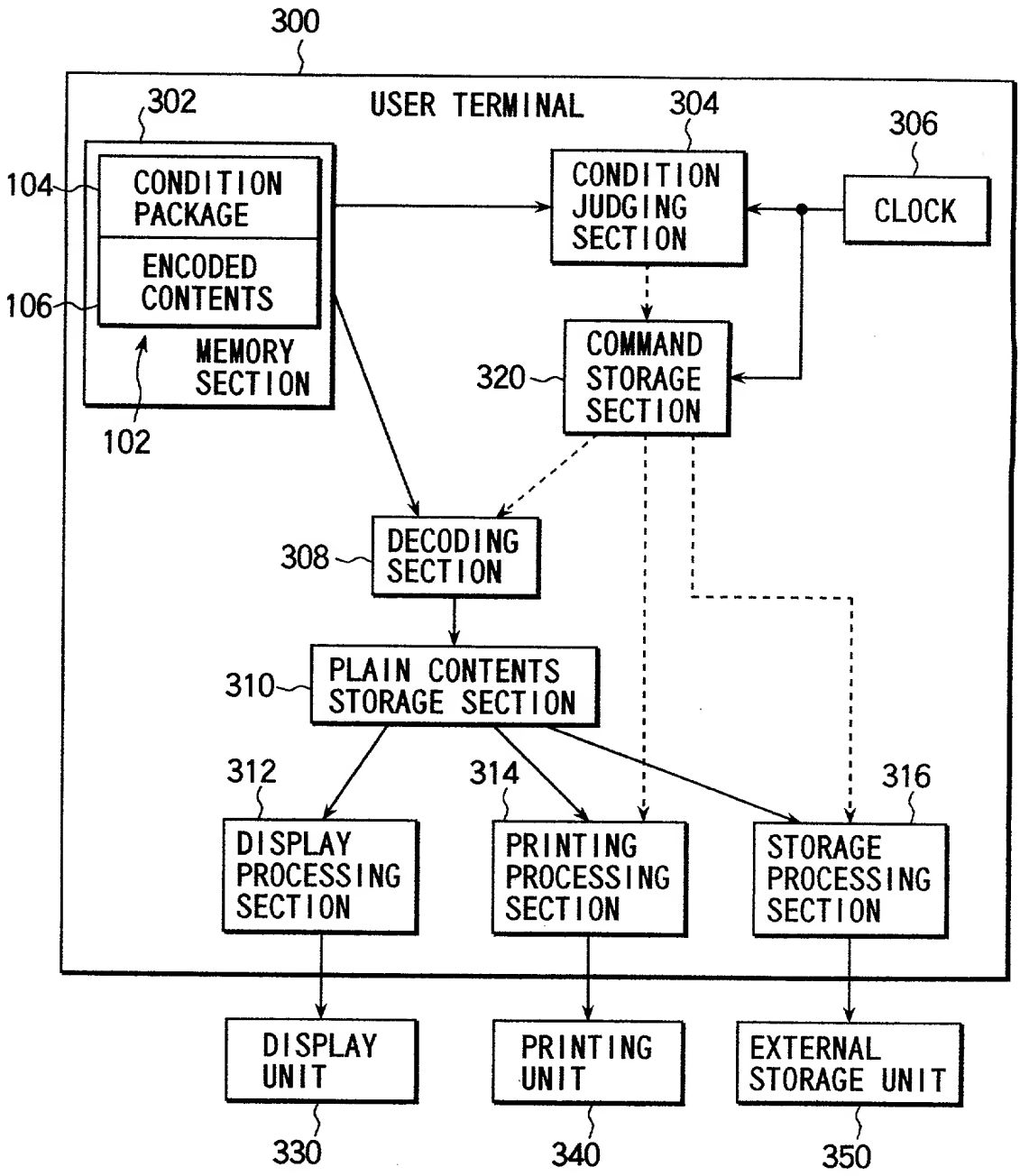


FIG. 17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USER TERMINAL
302
304
306
104
CONDITION PACKAGE
ENCODED CONTENTS
106
MEMORY SECTION
102
CONDITION JUDGING SECTION
CLOCK
COMMAND STORAGE SECTION
320
DECODING SECTION
308
PLAIN CONTENTS STORAGE SECTION
310
312
314
316
DISPLAY PROCESSING SECTION
PRINTING PROCESSING SECTION
STORAGE PROCESSING SECTION
DISPLAY UNIT
PRINTING UNIT
EXTERNAL STORAGE UNIT
330
340
350

FIG. 14

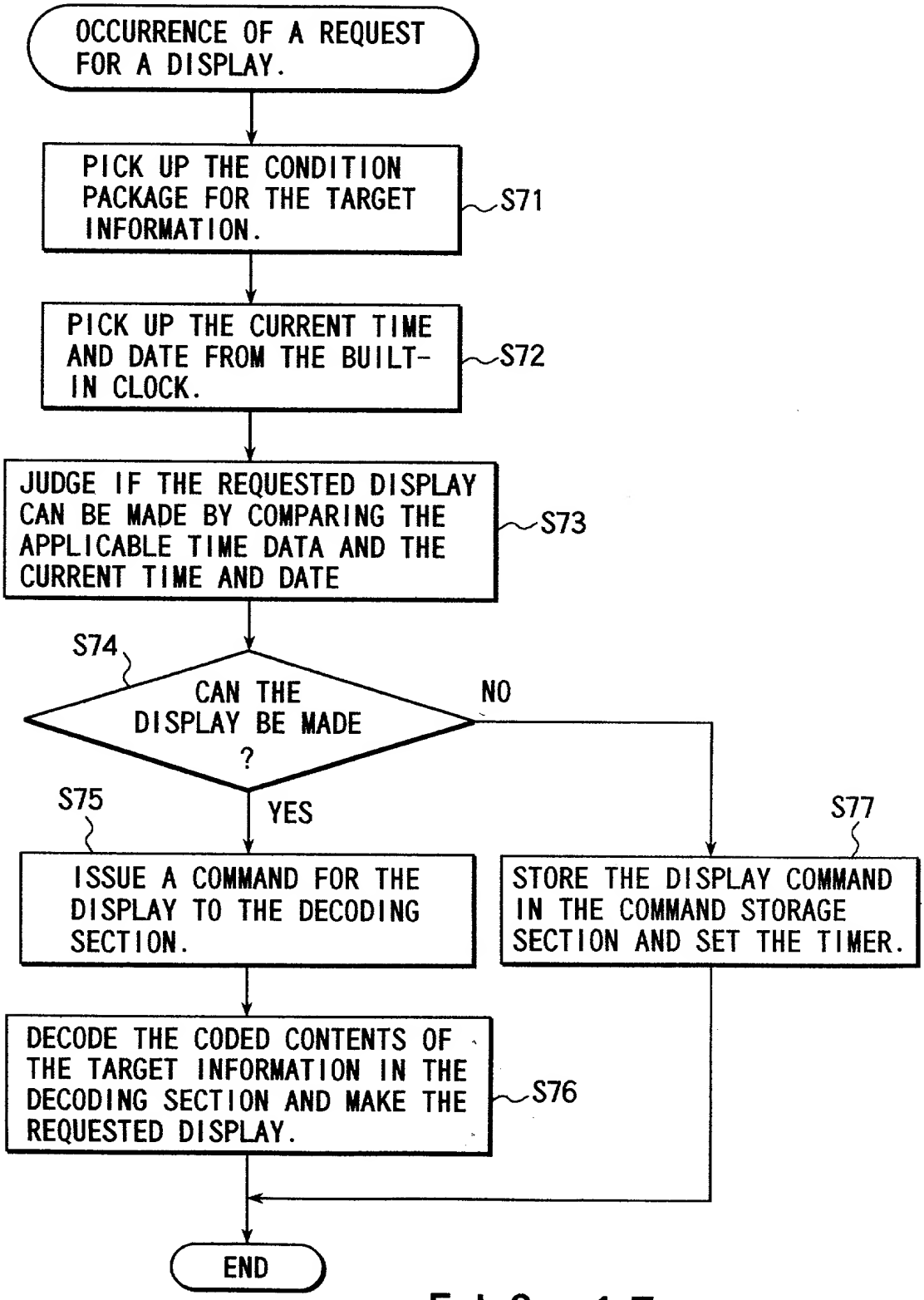
OCCURRENCE OF A REQUEST FOR A DISPLAY.
PICK UP THE CONDITION PACKAGE FOR THE TARGET INFORMATION.
S71
PICK UP THE CURRENT TIME AND DATE FROM THE BUILT-IN CLOCK.
S72
JUDGE IF THE REQUESTED DISPLAY CAN BE MADE BY COMPARING THE APPLICABLE TIME DATA AND THE CURRENT TIME AND DATE
S73
S74
CAN THE DISPLAY BE MADE ?
NO
YES
S75
S77
ISSUE A COMMAND FOR THE DISPLAY TO THE DECODING SECTION.
STORE THE DISPLAY COMMAND IN THE COMMAND STORAGE SECTION AND SET THE TIMER.
DECODE THE CODED CONTENTS OF THE TARGET INFORMATION IN THE DECODING SECTION AND MAKE THE REQUESTED DISPLAY.
S76
END

FIG. 15

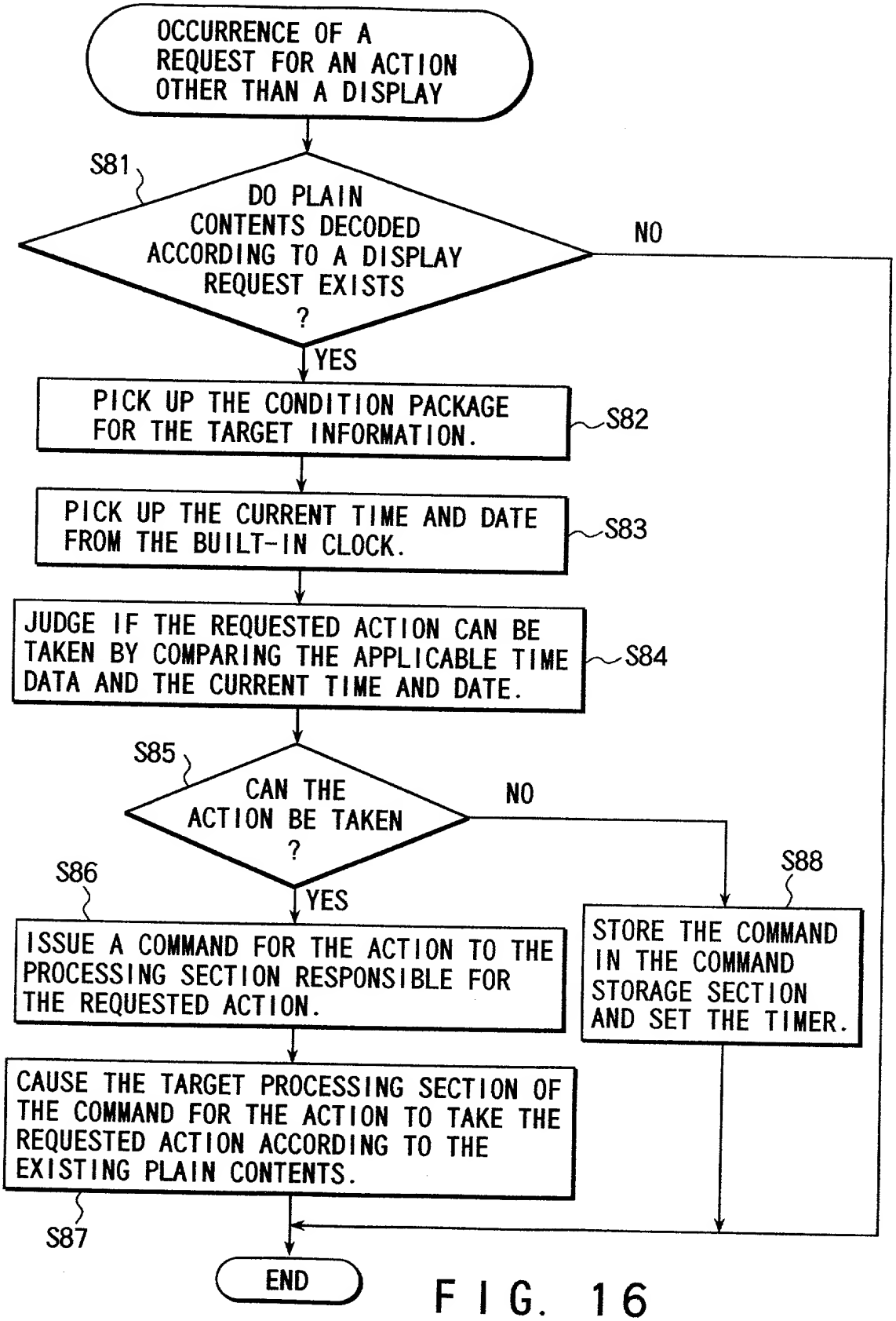
OCCURRENCE OF A REQUEST FOR AN ACTION OTHER THAN A DISPLAY
S81
DO PLAIN CONTENTS DECODED ACCORDING TO A DISPLAY REQUEST EXISTS ?
NO
YES
PICK UP THE CONDITION PACKAGE FOR THE TARGET INFORMATION.
S82
PICK UP THE CURRENT TIME AND DATE FROM THE BUILT-IN CLOCK.
S83
JUDGE IF THE REQUESTED ACTION CAN BE TAKEN BY COMPARING THE APPLICABLE TIME DATA AND THE CURRENT TIME AND DATE.
S84
S85
CAN THE ACTION BE TAKEN ?
NO
YES
S86
ISSUE A COMMAND FOR THE ACTION TO THE PROCESSING SECTION RESPONSIBLE FOR THE REQUESTED ACTION.
S88
STORE THE COMMAND IN THE COMMAND STORAGE SECTION AND SET THE TIMER.
CAUSE THE TARGET PROCESSING SECTION OF THE COMMAND FOR THE ACTION TO TAKE THE REQUESTED ACTION ACCORDING TO THE EXISTING PLAIN CONTENTS.
S87
END

FIG. 16

5,524,060-5,524,060

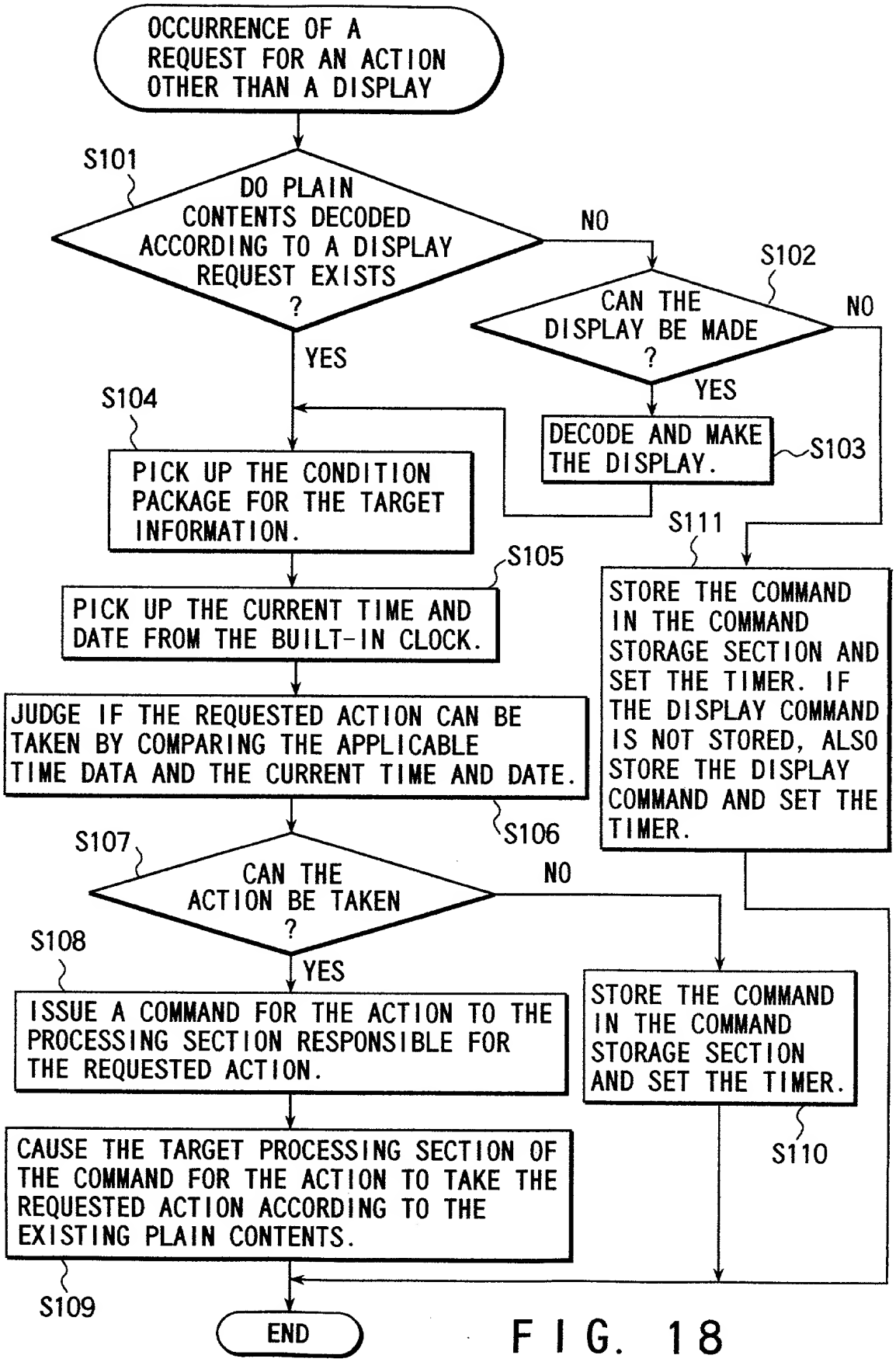

FIG. 18